LEARNING AND DIABETES

A Resource Guide for Connecticut Schools and Families

Connecticut State Department of Education — 2005

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INTRODUCTION

More than 18 million Americans have diabetes. In your work with children and youth in the school setting, it is likely that you already have, or will have, a student with diabetes in your care. Diabetes is one of the most common chronic diseases in school-aged children, affecting about 151,000 young people in the United States, or about 1 in every 400 to 500 young people under 20 years of age. Each year, more than 13,000 youths are diagnosed with type 1 diabetes. In addition, health care providers are finding more and more children and teens with type 2 diabetes, even though the disease is usually diagnosed in adults over the age of 40.

Diabetes is the sixth leading cause of death by disease in the United States. Long-term complications include heart disease, stroke, blindness, kidney disease, and amputation of the foot or leg. Although there is no cure, the disease can be managed and complications delayed or prevented.

Diabetes must be managed 24 hours a day, 7 days a week. For students with type 1 diabetes, and for some with type 2 diabetes, that means careful monitoring of their blood glucose (sugar) levels throughout the day and administering multiple doses of insulin therapy — now prescribed for most young people with diabetes. As a result, the school health team, which includes the school nurse, teachers, the school administrator and other school staff members, plays an important role in helping students manage their diabetes.

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Effective diabetes management is crucial:

- ✧ for the immediate safety of students with diabetes;
- ✧ for the long-term health of students with diabetes;
- ✧ to ensures that students with diabetes are ready to learn and to participate fully in school activities; and
- ✧ to minimize the possibility that diabetes-related emergencies will disrupt classroom activities.

While this manual is dedicated to children with diabetes, many of the recommendations and guidelines would pertain to *all* children with various health conditions.

The information in this manual is general in nature and does not constitute specific medical or legal advice. Readers should consult directly with medical professionals regarding specific questions about care of children with diabetes. Readers should consult with legal counsel regarding questions pertaining to the rights and/or responsibilities under state and federal law of any individual or institution receiving or providing care for children with diabetes.

This manual and future updates will be available on the State Department of Education website: http://www.state.ct.us/sde/

ACKNOWLEDGMENTS

This manual was developed through the cooperation of key organizations and individuals committed to improving diabetes care for children in schools throughout Connecticut. Connecticut State Department of Education staff members would like to thank them for their collaboration, expertise and perseverance regarding its development.

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We are also deeply grateful to those who so graciously reviewed the manual, shared the lessons learned and final products of their school and district policies and manuals. These individuals and organizations are listed below:

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National Diabetes Education Program:
Helping the Student with Diabetes Succeed: A Guide for School Personnel
New York State Department of Health:
Diabetes in Children – A Resource Guide for Schools
Wisconsin Department of Education:
Children with Diabetes: A Resource Guide for Wisconsin Schools and Families

Thanks to the Diabetes Prevention and Control Program at the Connecticut Department of Public Health for the printing of this manual. Publication was supported by funds from the Centers for Disease Control and Prevention Award U32-CCU122689-03.

SECTION ONE

Diabetes Overview

Diabetes is a disorder of metabolism — the way in which the body converts the food you eat into energy. The food you eat is broken down by digestive juices into the fuel component you need to survive, including a sugar called glucose. Glucose is the body's main source of energy. After digestion, glucose passes into your bloodstream, where it is available for cells to take in and use or store for later use.

In order for your cells to take in glucose, a hormone called insulin must be present in your blood. Insulin acts as a "key" that unlocks "doors" on cell surfaces to allow glucose to enter the cells. Special cells (islet cells) produce insulin in an organ called the pancreas, which is about 6 inches long and lies behind your stomach.

In people who do not have diabetes, the pancreas automatically produces the right amount of insulin to enable glucose to enter cells. In people who have diabetes, the body does not make or properly use insulin. If glucose cannot get inside cells, it builds up in the bloodstream. The buildup of glucose in the blood — sometimes referred to as high blood sugar or hyperglycemia (which means "too much glucose in the blood") — is the hallmark of diabetes.

Careful monitoring and prompt intervention are necessary to prevent life threatening hypoglycemic episodes and long-term complications.

When the glucose level in your blood goes above a certain level, the excess glucose flows out from the kidneys (the organs that filter wastes from the bloodstream) into the urine. The glucose takes water with it, which causes frequent urination and great thirst. These two conditions — frequent urination and unusual thirst — are usually the first noticeable signs of diabetes. Weight loss often follows, resulting from the loss of calories and water in urine.

When insulin is no longer made, it must be obtained from another source – insulin shots or an insulin pump. When the body does not use insulin properly, oral medications may be taken instead of, or in addition to, insulin shots. Neither insulin nor other medications, however, are cures for diabetes; they only help control the disease.

Diabetes management balances careful control of diet, exercise, and medication. Careful monitoring and prompt intervention are necessary to prevent life threatening hypoglycemic episodes and long-term complications such as heart disease, kidney failure, retinopathy, and serious impairment of circulation that may require amputations. [1]

[1] DCCT study

I. Types of Diabetes

Diabetes occurs in several different forms. This manual will focus primarily on issues related to type 1 diabetes in children. All children with diabetes must be allowed to participate fully in all school activities. They need the cooperation and support of school staff members to help them with their treatment plan.

A. Type 1 Diabetes

Type 1 diabetes usually has a very rapid onset. It was previously called Juvenile Diabetes because most people develop it as children or teenagers.

Type 1 Diabetes

- ✧ *Most Common in Children*
- ✧ *Rapid Onset*
- ✧ *Pancreas cannot Produce Insulin*

Symptoms:

- ✧ *Increased Thirst and Urination*
- ✧ *Constant Hunger*
- ✧ *Weight Loss*
- ✧ *Blurred Vision*
- ✧ *Fatigue*

The immune system is the body's system for fighting infection. In people with type 1 diabetes, the immune system attacks the beta cells (the insulin-producing cells of the pancreas) and destroys them. Why this happens is not fully understood. But because the pancreas can no longer produce insulin, people with type 1 diabetes need to take insulin daily to live. Type 1 diabetes can occur at any age, but it occurs most often in children and young adults.

There is no single way to treat type 1 diabetes. Each child's life events vary and as such, experienced diabetes teams are necessary to set up individualized treatment plans. For treatment plans to be most successful, an insulin regimen will be tailored to the needs of the child, as will a meal plan and recommendations for physical activity. New information on diabetes management allows people with diabetes to be more liberal with food planning.

Blood glucose monitoring[2] is essential to help assess how well the treatment plan is working. Most children can perform blood glucose checks by themselves but may need a private place to do so. Some children may need supervision to see that the procedure is done properly and results are recorded accurately How often the child checks or whether he/she checks at school at all are decisions made in conjunction with the child, family, child's diabetes team and school personnel.

It is the board of education's responsibility to ensure that staff, including nursing staff has adequate training and the updated skills necessary to best assist children with diabetes. The school nurse can then recognize when additional training is needed to perform a particular procedure and to help determine where appropriate training can be obtained.

[2] Although the terms "blood glucose testing" and "blood glucose checking" are also common terms, for the purpose of this manual, the term "blood glucose monitoring" will be used.

Symptoms of Type 1 Diabetes

Symptoms usually develop over a short period of time. They include increased thirst and urination, constant hunger, weight loss, and blurred vision. Affected children also may feel very tired all the time. If not diagnosed and controlled with insulin, the child with type 1 diabetes can lapse into a life-threatening condition known as diabetic ketoacidosis (KEY-toe-asi-DOE-sis), or DKA.

Risk factors

Although scientists have made much progress in predicting who is at risk for type 1 diabetes, they do not yet know what triggers the immune system's attack on beta cells. They believe that type 1 diabetes is due to a combination of genetic and environmental factors. Researchers are working to identify these factors and to stop the autoimmune process that leads to type 1 diabetes.

B. Type 2 diabetes

Type 2 diabetes is the most common form of the disease, representing 90-95 percent of people with diabetes. It was previously known as adult-onset or non-insulin dependent diabetes because it most often occurs in overweight adults ages 40 or older. Now, as more children and adolescents in the United States become overweight and inactive, type 2 diabetes occurs more often in young people. To control their diabetes, children with type 2 diabetes may need to take oral medication, insulin, or both.

The first step in the development of type 2 diabetes is often a problem with the body's response to insulin, called insulin resistance. For reasons scientists do not completely understand, the body cannot use insulin very well. This means that the body needs increasing amounts of insulin to control blood glucose. The pancreas tries to make more insulin, but after several years, insulin production may drop off.

Type 2 Diabetes

- *Usually more common in overweight adolescents and adults*
- *Develops slowly*
- *Insulin resistance*

Symptoms

- *Fatigue*
- *Increased thirst and urination*
- *Nausea*
- *Weight loss*
- *Acanthosis nigricans*

Symptoms of Type 2 Diabetes

Symptoms may develop slowly or quickly, and may be similar to those of type 1 diabetes. A child or teen may feel tired, thirsty, or nauseated and urinate often. Other symptoms include rapid weight loss, blurred vision, frequent infections, yeast infections, and slow healing of wounds or sores. High blood pressure may be a sign of insulin resistance. In addition, physical signs of insulin resistance include acanthosis nigricans (A-can-tho-sis NIG-reh-cans), where skin around the neck, armpits or groin appears dark, thick, and velvety. On the other hand, some children or adolescents with type 2 diabetes show no symptoms at all when they are diagnosed. For that reason, it is important for parents and caregivers to talk to their health care providers about screening children or teens at high risk for diabetes.

Risk factors

Being overweight and having a family member who has type 2 diabetes are the key risk factors. In addition, type 2 diabetes is more common in certain racial or ethnic groups, such as African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Pacific Islander Americans. For children and teens at risk, health care providers can encourage, support, and educate the entire family to make lifestyle changes that may delay – or prevent – the onset of type 2 diabetes. Such changes include reaching and maintaining a healthy weight, and engaging in regular physical activity.

Taking care of diabetes is important. If not treated, diabetes can lead to serious health problems. The disease can affect the blood vessels, eyes, kidneys, nerves, gums, and teeth, and it is the leading cause of adult blindness, lower limb amputations, and kidney failure. People with diabetes also have a higher risk of heart disease and stroke. Some of these problems can occur in teens and young adults who develop diabetes during childhood. The good news is that research shows that these problems can be greatly reduced or delayed by keeping blood glucose levels near normal.

II. Effective Diabetes Management In Schools

A. What Is Effective Diabetes Management?

The goal of effective diabetes management is to control blood glucose levels by keeping them within a target range that is determined for each child. Optimal blood glucose control helps to promote normal growth and development and allows for optimal learning. Effective diabetes management is needed to prevent the immediate dangers of blood glucose levels that are too high or too low. As noted earlier, research has shown that maintaining blood glucose levels within the target range is essential to prevent or delay the long-term complications of diabetes, such as heart attack, stroke, blindness, kidney failure, nerve disease, and amputations of a foot or lower limb.

The key to optimal blood glucose control is to carefully balance food, exercise, and insulin or medication. As a general rule, food makes blood glucose levels go up, and exercise and insulin make blood glucose levels go down. Several other factors, such as growth and puberty, mental stress, illness, or injury also can affect blood glucose levels.

The key to optimal blood glucose control is to carefully balance food, exercise, and insulin or medication.

Students with diabetes must monitor their blood glucose levels throughout the day by using a blood glucose meter. The meter gives a reading of the level of glucose in the blood at the time it is being checked. If blood glucose levels are too low (hypoglycemia) or too high (hyperglycemia), students can then take corrective action such as eating, modifying their activity level, or administering insulin. Low blood glucose levels, which, in rare cases, can be life-threatening, present the greatest immediate danger to people with diabetes (see hypoglycemia, page 10).

Many students can handle all or almost all of their diabetes care by themselves. Others, because of age, developmental level, or inexperience, will need help from school staff. The school nurse is the most appropriate person in the school setting to provide care for a student with diabetes. However, diabetes management is needed 24 hours a day, 7 days a week and diabetes emergencies can happen at any time. More importantly, the school nurse may not always be available. Therefore, the board of education should identify appropriate school personnel to be prepared to respond to emergencies at school and at all school-sponsored activities in which a student with diabetes participates. In this case, the school nurse should ensure proper training of appropriate school personnel and provide professional supervision and consultation regarding routine and emergency care of the student.

B. How Do Schools Plan and Implement Effective Diabetes Management?

Collaboration, cooperation, and planning are key elements in developing and implementing successful diabetes management at school**.** As is true for children with other chronic diseases, students with diabetes are more likely to succeed in school when students, parents, school nurses, principals, teachers, other school personnel, and the student's health care providers (or personal health care team) work together to ensure effective diabetes management. Your school probably has similar plans and systems in place for children with other health considerations.

To work collaboratively, a school team should be assembled that includes people who are knowledgeable about diabetes, the school environment, and federal and state education and nursing laws. Team members might include the student, parents/guardian, the school nurse, school food service and other health personnel, administrators, the principal, the student's teacher(s), guidance counselor, and other relevant staff.

This team works together to implement the recommendations developed by the student's personal health care team and family. The team decides who needs to receive appropriate medical information about the child, and who will be trained by the nurse to assist with monitoring and performing certain tasks. In addition, the school team should be part of the group that develops and implements the student's Individual Health Care Plan, Emergency Care Plan, Section 504 Plan (if needed), Individualized Education Program (IEP), or other education plan that addresses the student's developmental and educational needs so that diabetes can be managed safely and effectively in school. The plan is based, in part, on the student's medical recommendations, sometimes called a Diabetic Medical Management Plan (DMMP) as well as recommendations from the team.

C. The Law

A number of laws address the school's responsibilities to help students with diabetes on a case by case basis. Under certain federal laws, any school that receives federal funding must reasonably accommodate the special needs of children with diabetes. If found eligible for services, federal law requires an individualized assessment and reasonable accommodation within the child's usual school setting with as little disruption as possible to the school's and the child's routines, in a way that allows the child to fully participate in all school activities.

Schools have a responsibility to be knowledgeable about all relevant state and federal laws, and about how they impact policies in this area. Brief descriptions of the most relevant federal laws follow.

The Americans with Disabilities Act (ADA) prohibits discrimination against any individual with a disability. *Section 504 of the Rehabilitation Act of 1973* further protects the rights of children with disabilities, requiring reasonable accommodations that allow for the provision of a "free and appropriate public education" (FAPE). This legislation applies to all programs and activities receiving federal financial assistance, including public schools. Children are eligible for accommodations through Section 504 if they have a physical or mental impairment that substantially limits a major life activity. Major activities may include walking, seeing, hearing, speaking, breathing, learning, working, caring for oneself, and performing manual tasks. Children with diabetes are often considered eligible because of their special metabolic and dietary requirements. It is not required that the student receive special education services to be eligible for other services.

The Individuals with Disabilities Education Act of 1976 (IDEA) provides financial assistance to state and local agencies for educating students with disabilities. Children are eligible if they fit one or more of the 13 categories of disability and if, because of the disability, they require special education and related services. The category that most often applies to children with diabetes is Other Health Impaired (OHI). This is defined as "having a limited strength, vitality or alertness, including heightened alertness to environmental stimuli, that results in limited alertness with respect to the education environment, that (1) is due to a chronic or acute health problem; and (2) adversely affects a child's educational performance."

The Family Education Rights and Privacy Act of 1974 (FERPA) protects the privacy of students and their parents by restricting access to school records in which individual student information is kept. This act sets the standard for the confidentiality of student information. FERPA also sets the standards for notification of parents and eligible students of their rights with regards to access to records, and stipulates what may or may not be released outside the school without specific parental consent. Within schools, FERPA requires that information be shared among school personnel only when there is a legitimate educational interest.

Schools have a responsibility to be knowledgeable about all relevant state and federal laws, and about how they impact policies in this area.

Public schools in Connecticut are required to meet standards set by the Occupational Safety and Health Administration (OSHA), a regulatory agency within the US Department of Labor. These standards include the need for procedures to address possible exposure to blood-born pathogens. Under OSHA regulations, schools are required to maintain a clean and healthy school environment. Schools must adhere to *Universal Precautions* designed to reduce the risk of transmission of blood-borne pathogens, which include the use of barriers such as surgical gloves and other protective measures when dealing with blood and other body fluids or tissues.

These federal laws provide a framework for planning and implementing effective diabetes management in the school setting. School administrators and nursing personnel also should determine whether there are applicable state and local laws that should be factored into helping the student with diabetes.

D. School Plans

It is recommended that schools to develop a plan for accommodating the health needs of children with diabetes. These plans should be, in part, based on the student's health care provider's medical management plan (sometimes called Diabetic Medical Management Plan [DMMP]). The DMMP is completed by the student's parents/guardians and the health care provider. It generally includes how to recognize and treat hypoglycemia and hyperglycemia as well as specific orders for blood glucose monitoring, administration of insulin, and the steps to take in an emergency.

A written school plan for each student's diabetes management helps the student, their families, school staff, and the student's health care providers know what is expected of them. These expectations should be laid out in writing in the following documents as determined by the team:

- *Individual Health Care Plan (IHCP)* – describes how the school intends to meet an individual child's daily health and safety needs in all contexts, while under the care of the school. IHCPs are developed by the school nurse, in conjunction with parents, the student, healthcare providers, and other school personnel. IHCPs are usually developed for students with multiple health needs or whose health needs require daily intervention. The plan includes a summary of health assessments, a nursing diagnosis, goals, and plans of action covering the range of possible concerns. It is also used to document interventions and evaluate outcomes.
- *Emergency Care Plan (ECP)*, based on the information provided by the student's health care provider, family and school team the ECP describes how to recognize hypoglycemia and hyperglycemia and what to do as soon as signs or symptoms of these conditions are observed. The ECP is often part of the IHCP. Emergency care plans provide specific directions about what to do in an emergency. These written plans assist the school nurse, school personnel and emergency responders react to an emergency situation in a prompt, safe and individualized manner.
- *Education plans*, such as the Section 504 Plan or Individualized Education Program (IEP), explain what accommodations, education aids, and services might be necessary for each student.

This information should be reviewed, along with the student's IHCP and/or 504 Plan, and updated each school year, or upon a change in the student's prescribed regimen, level of self-management, school circumstances (e.g., a change in schedule), or at the request of the student or parents/guardian.

The Individual Health Care Plan (IHCP) and Emergency Care Plans

The following information should be essential in the development of a student's IHCP:

- ✧ Date of diagnosis
- ✧ Current health status
- ✧ Emergency contact information
- ✧ Student's willingness and ability to perform self-management tasks at school
- ✧ List of diabetes equipment and supplies
- ✧ Specific medical orders
  - ◆ Blood glucose monitoring
  - ◆ Insulin, glucagon, and other medications to be given at school
  - ◆ Meal and snack plan
  - ◆ Exercise requirements
  - ◆ Additional monitoring
- ✧ Typical signs, symptoms, and prescribed treatment for hypoglycemia
- ✧ Typical signs, symptoms, and prescribed treatment for hyperglycemia

Note: See Appendix A for sample plans.

E. What are the Elements of Effective Diabetes Management in School?

Diabetes management entails monitoring or checking blood glucose levels throughout the day, following an individualized meal plan, getting regular physical activity, and administering insulin and/or other medications to help keep blood glucose levels in the target range and to help prevent the onset of hypoglycemia or hyperglycemia. Additional elements of diabetes management in school include planning for events outside the usual school day, planning for appropriate disposal of materials that come in contact with blood, and dealing with the emotional and social aspects of living with diabetes.

Each student with diabetes has different needs, but school plans developed for such students are likely to address the following common elements:

- ✧ Where and when blood glucose monitoring and treatment will take place;
- ✧ Identity of school personnel who are trained to assist the student;
- ✧ Location of the student's diabetes management supplies;
- ✧ Ensuring free access to the restroom and water fountain;
- ✧ Discussion of nutritional needs, including provisions for meals and snacks;
- ✧ Issues related to full participation in all school-sponsored activities and field trips;

- ✧ Accommodations such as alternative times for academic exams if the student is experiencing hypoglycemia or hyperglycemia;
- ✧ Permission for absences by the local board of education, without penalty, for doctors' appointments and diabetes-related illness; and
- ✧ Maintenance of confidentiality and the student's right to privacy.

1. Monitoring Blood Glucose Levels

Blood glucose monitoring is a necessary and useful tool in the management of diabetes. Blood glucose monitoring is done with a small device called a *blood glucose meter*. Monitoring helps identify patterns in blood glucose fluctuation, as well as help to detect acute problems of high or low blood sugar. Students often monitor their blood glucose every time they eat a meal to help them decide how much insulin to take at that time. There are numerous brands of monitors available, each with specific features that an individual may find useful. Since the school nurse plays an integral role in assisting children with diabetes in their tasks of daily management while at school, he or she must become familiar with the various monitors being used. To monitor glucose levels, a drop of blood is required. This can be obtained from fingers, arms, and legs.

Students usually check their blood glucose:

- ✧ *before eating snacks or meals*
- ✧ *before physical activity*
- ✧ *when they have symptoms of high or low blood glucose*

What should a blood sugar level be?

For a person who does not have diabetes, a normal blood glucose level is 70-120 mg/dl. Blood sugar levels in a child with diabetes will vary depending on insulin action times, food consumed, activity level, and illness. The student's diabetes health care professional will advise the child's family on an appropriate *target range.* The goal is for the blood sugar to fall within the target range the majority of the time. It is common for children with diabetes to experience fluctuations of their blood sugar levels outside of their target range. The child's diabetes care plan should include his/her target range and outline corrective actions when the blood glucose level is outside the target range.

Some helpful suggestions:

- ✧ Most children can perform blood glucose monitoring by themselves. This may be done safely in the classroom or the child may prefer to do this in a more private setting. The State Commissioner of Education recently released a circular letter regarding the State of Connecticut's guidelines for blood glucose self-monitoring in schools (See Appendix G).
- ✧ Allow child to assist in the steps in the monitoring procedure. How much involvement will depend upon the age of the child and their capability. Even small children can help with some of the steps such as choosing the site or getting the strip out of the container.
- ✧ The site for monitoring should be cleaned with warm soapy water and dry before being pricked. (If hand-washing is not available, use an alcohol wipe and allow to dry.)
- ✧ Apply adequate amount of blood to the test strip.
- ✧ Don't get in the habit of calling blood glucose results "good" or "bad." Values are either "within range" or "out of range" which can be called "high" or "low." Try to use a non-judgmental approach when a result is abnormal.
- ✧ If the blood glucose reading is unusually high or unusually low, you may repeat the test if you suspect a false reading. Then, treat for hyperglycemia or hypoglycemia if the second test indicates it is necessary according to the student's IHCP.
- ✧ If a low blood glucose is suspected, the finger is the recommended site for blood glucose monitoring.
- ✧ The Self-Monitoring Checklist (See Appendix G) can be used by schools to determine if it is appropriate for a child to perform blood glucose self-testing at school.

Understanding HYPOglycemia (low blood glucose)

Hypoglycemia is one of the most frequent complications of diabetes and can happen very suddenly!

Hypoglycemia, also called "low blood glucose" or "low blood sugar," is one of the most frequent complications of diabetes and can happen very suddenly. Hypoglycemia is a blood glucose level < 70 mg/dl. This is the greatest immediate danger to students with diabetes; it sometimes cannot be prevented. Hypoglycemia occurs when a student's blood glucose level falls too low, usually as a result of administering too much insulin, skipping or delaying meals or snacks, not eating enough food as prescribed in the meal plan, exercising too long or too intensely, or a combination of two or more of these factors. It is more likely to occur before lunch, at the end of the school day, or during or after physical education classes. Hypoglycemia usually can be treated easily and effectively. If it is not treated promptly, however, hypoglycemia can lead to unconsciousness and convulsions. Early recognition of its symptoms and prompt treatment, in accordance with the student's IHCP, are necessary for preventing severe symptoms that may place the student in danger. The information contained in the ECP, should be provided to all school personnel who have responsibility for the student with diabetes (see Appendix A for a sample plan).

The student should never be left alone or sent anywhere alone (or with another child) when experiencing hypoglycemia.

Not all students, especially young children, will recognize the symptoms of hypoglycemia with every episode. Therefore, school personnel should be familiar with the symptoms and treatment so that an urgent problem can be handled appropriately. Hypoglycemia can impair thinking abilities and sometimes can be mistaken for misbehavior. If a student has a sudden change in behavior, becomes lethargic, combative, or unconscious, or is having a seizure or convulsion, presume that the student has hypoglycemia. Treat the situation as a hypoglycemic emergency and check the student's blood glucose level immediately. If a blood glucose meter is not available in the immediate area, or if the blood glucose level is otherwise unknown, treat the student for hypoglycemia**.** The student should never be left alone or sent anywhere alone when experiencing hypoglycemia.

Symptoms of hypoglycemia are different for each student and may vary from episode to episode. They include:

Mild/Moderate Symptoms

✧ shaky	✧ sleepy	✧ changed personality
✧ sweaty	✧ dizzy	✧ inability to concentrate
✧ hungry	✧ confused	✧ changed behavior
✧ pale	✧ disoriented	✧ weak
✧ headache	✧ uncoordinated	✧ lethargic
✧ blurry vision	✧ irritable or nervous	✧ slurred speech

Severe Symptoms

✧ inability to swallow	✧ seizures or convulsions	✧ loss of consciousness

What to Do for a Child who is Showing Signs and Symptoms of Mild Hypoglycemia (40-70mg/dl)

Optimally, check blood glucose before treating a child suspected of hypoglycemia. When in doubt, treat. If the child's hypoglycemia is above 40 mg/dl, give the child some quick-acting sugar (15 grams of carbohydrate), such as one of the following:

- ✧ ½ cup (4 oz.) of juice;
- ✧ ¾ cup (6 oz.) of REGULAR (not diet) soda;
- ✧ 3-4 glucose tablets;
- ✧ 4-5 small jelly beans or gum drops;
- ✧ 1 mini box of raisins; OR
- ✧ 1 cup (8oz.) low fat or skim milk.

What to Do for a Child with Moderate Hypoglycemia (less than 40mg/dl) but Responsive

If the child's blood glucose levels are 40 mg/dl or less and the child is still responsive and able to swallow and follow directions, double the treatment amounts indicated above. If the child has difficulty following directions or eating, but can swallow, administer an entire tube of glucose gel in between his or her cheek and gums and gently rub to be sure the sugar is being absorbed. Follow with food.

In any of the above cases, check blood glucose 15 minutes after treatment. If the blood glucose result is still less than 70 mg/dl, or if the child still has symptoms, repeat the quick sugar treatment and blood glucose testing cycle until the child is symptom free and the blood glucose result is above 70 mg/dl. This can be summarized as the "Rule of 15." Give 15 grams of carbohydrate, wait 15 minutes, and then recheck. If still less than 70 mg/dl, repeat the cycle giving another 15 grams of carbohydrate and rechecking in 15 minutes.

"RULE OF 15"

- *Give 15 grams of carbohydrate*
- *Wait 15 minutes, and then recheck blood glucose*
- *If still less than 70 mg/dl, repeat another 15 grams of carbohydrate*
- *Wait 15 minutes and then recheck*

When the child feels better and blood glucose levels have risen to above 70 mg/dl, give one of the following if the child's next meal is more than one hour away and/or if the child will be participating in active play or sports:

- 4 graham cracker squares with peanut butter or cheese;
- 6 saltine crackers with peanut butter or cheese; OR
- an equivalent combination of carbohydrate (15 grams) and protein (1 oz.).

The child may return to class after the blood glucose is above 70mg/dl and he or she no longer has symptoms.

What to Do for A Child who is Showing Signs and Symptoms of Severe Hypoglycemia

Be sure the child is lying down in a safe area protected from injury. Position the child on his or her side. Call 9-1-1 and the appropriate emergency contacts, as described in the student's Emergency Care Plan (ECP). Follow steps outlined in the ECP, including use of glucagon or the treatment specified in the medical orders. You may also put Instaglucose inside cheeks and rub in. Do not attempt to put anything between the teeth. As the child regains consciousness, nausea and vomiting may occur. Child should be placed on his/her side.

What is Glucagon?

Glucagon is a hormone that causes the liver to release sugar into the blood. It is used to raise the blood sugar when a child is unable to take liquids or food by mouth because of severe sleepiness, unconsciousness, or seizure activity. Glucagon must be injected with a syringe into the skin, like insulin. It should be administered as soon as possible. Glucagon, is the medically endorsed treatment of choice for severe hypoglycemia. Other options and alternatives include

glucose gel or other glucose supplements. It is important to remember that the risk of not giving Glucagon is more life-threatening than giving it under these emergency conditions.

If Glucagon is ordered in school:

- ✧ One Glucagon Emergency Kit supplied by the family is needed. Keep Glucagon at room temperature, and inform the appropriate staff of the storage location. Check the date of Glucagon kits on a regular basis. Discard if past the expiration date. Obtain a refill immediately. When possible, practice drawing up Glucagon with an expired kit.
- ✧ Glucagon must be mixed as per instructions.
- ✧ If Glucagon is part of a child's ECP then a physician's order and parental permission is needed.
- ✧ Glucagon injections may only be administered by the school nurse in the school setting.

In the absence of the school nurse to administer Glucagon, or if glucagon is not ordered, glucose gel may be an appropriate substitute for non-nursing school staff. Glycemic effects of glucagons are short lived so once the student is able to swallow, a carbohydrate liquid (i.e., juice, low-fat milk) should be given.

Symptoms of Hyperglycemia:

- ✧ *Increased thirst*
- ✧ *Frequent urination*
- ✧ *Nausea*
- ✧ *Blurred vision*
- ✧ *Fatigue*

Understanding HYPERglycemia (High Blood Glucose)
Hyperglycemia, also called "high blood glucose," or "high blood sugar," is a serious manifestation of diabetes that may be caused by too little insulin, illness, infection, injury, stress or emotional upset, ingestion of food that has not been covered by the appropriate amount of insulin, or decreased exercise or activity. High blood glucose symptoms include increased thirst, frequent urination, nausea, blurry vision, and fatigue. In the short term, hyperglycemia can impair cognitive abilities and adversely affect academic performance. Over a long period of time, even moderately high blood glucose levels can lead to serious complications, such as heart disease, blindness, kidney failure, and amputations.

Hyperglycemia does not usually result in acute problems. If, however, the student fails to take insulin, if a pump malfunctions and delivers less insulin, or if either physical or emotional stress causes the insulin not to work effectively, there will be a breakdown of fat, causing ketones to form (see below).

At first, ketones will be cleared by the kidneys into the urine, but if there are more than the kidneys can handle, they will build up in the blood and may result in diabetic ketoacidosis (DKA). This complication will cause a fruity breath odor, nausea, vomiting, stomach pain, and, if untreated, deep breathing and increasing sleepiness. Students who use insulin pumps can go into DKA within hours if their pumps stop delivering insulin appropriately.

DKA can be prevented if the student's urine is checked for ketones during times of illness, especially if vomiting occurs, or whenever the blood glucose level exceeds the target range provided in the IHCP. The test involves dipping a special strip into the urine and comparing the resulting color to a color chart or by blood ketone testing.

Treatment of hyperglycemia may involve drinking extra water or diet drinks or administering supplemental insulin in accordance with the student's healthcare providers recommendations. Free and unrestricted access to liquids and the restroom must be provided, as high blood glucose levels increase urination and may lead to dehydration if the student cannot replace the fluids.

The student's blood glucose level should be monitored closely until it returns to the target range, as outlined in the IHCP. If treatment does not lower blood glucose levels and clear the ketones, if vomiting occurs, or if the student is lethargic or experiences breathing difficulties, call the parents/guardian or call for medical assistance, as outlined in the ECP. Treatment guidelines for ketones and when to call parents should be listed in the student's IHCP/ECP. Information about the symptoms and treatment of hyperglycemia, contained in the ECP should be provided to all school personnel who have responsibility for the student with diabetes (see Appendix A for a sample plan).

Administering Insulin

Students with type 1 diabetes, and some students with type 2 Diabetes, require insulin to be given at regular times each day. Some students may need additional or corrective dosages of insulin to treat hyperglycemia or to cover a rise in blood glucose levels. The IHCP should specify the dosage, delivery system, and schedule for insulin administration, which will differ for each student as prescribed by their health care provider, as well as specify who will administer prescribed insulin and under what circumstances.

Insulin has three characteristics:

- ✧ Onset is how long insulin takes to reach the bloodstream and begin lowering blood glucose.
- ✧ Peak time is when insulin is at its maximum strength in terms of lowering blood glucose.
- ✧ Duration is the number of hours insulin continues to lower blood glucose levels.

Today, new types of insulin and new delivery systems do a better job of keep blood glucose levels within target range. These options may require closer monitoring and possibly more assistance for students with diabetes. There are several types of insulin that are used in combination to treat people with diabetes. These different types of insulin have been manufactured either to have immediate (rapid-acting or short-acting insulin), intermediate, or long (basal insulin) onset and duration of action in the body. A coordinated combination of insulin is used to allow for adequate treatment of diabetes at meals, snacks, during periods of physical activity, and through the night. (See Appendix C for types and characteristics of insulin.)

Opened vials of insulin should be refrigerated or may be left at room temperature for 30 days after opening. Unopened vials should be stored in the refrigerator and are good until the expiration date. (See Appendix-for insulin storage and substitution.)

The three most common ways to administer insulin

- **Insulin syringes** available today make it easier to draw up the proper dosage, and shorter, smaller needles make injections easier and relatively painless.

- **An insulin pen** looks like a fountain pen. The pen holds a cartridge of insulin, and a needle is screwed onto its tip just before use. Insulin pens are convenient and most appropriate when children need a single type of insulin.

- **An insulin pump** is a computerized device that looks like a pager and is usually worn on the student's waistband or belt. The pump is programmed to deliver small, steady doses in insulin throughout the day; additional doses are given to cover food or high blood glucose levels. The pump holds a reservoir of insulin attached to a system of tubing called an infusion set. Most infusion sets are started with a guide needle, then the plastic cannula (a tiny, flexible plastic tube) is left in place, taped with dressing, and the needle is removed. The cannula is usually changed every 2 or 3 days or when the blood glucose levels remain above target range. More students are opting for insulin pump therapy to keep blood glucose levels in better control (See Appendix C for information on pens and pumps).

Advantages of an Insulin Pump

- *Most closely mimics the body's normal release of insulin.*
- *Two types of insulin delivery:*
  1. *Basal: small hourly dose that is preprogrammed*
  2. *Bolus: given to cover food or cover high blood sugar*
- *Pump therapy allows for greater flexibility in food choices and meal timing.*
- *Children who wear pumps can participate in all school activities.*

Some students who need insulin during the school day are able to administer it on their own; others need supervision; and some need someone to administer the insulin for them. The school nurse should provide this help in accordance with the IHCP. School personnel who are responsible for the student's care should be knowledgeable about the student's insulin delivery system and how to respond to an emergency.

When a school nurse is not available to administer insulin and the student is not able to administer his/her own insulin, alternative plans need to be developed. In some circumstances, the parent or other immediate family member (such as the grandparent) is available to come into school during the school day to administer his/her own child's insulin. When the school nurse or parent is not available to administer the insulin, the plan may identify a school nurse in a nearby school that would be available for both routine administration of insulin or emergencies.

For students with type 2 diabetes, treatment may commonly involve oral medication and less frequently administration of insulin.

2. Nutrition

Nutrition is one of the cornerstone treatments of diabetes. The goals of nutrition therapy include an adequate caloric and nutritional intake for growth and development and the balance of food with insulin and activity to achieve target blood glucose levels.

Nutrition is one of the cornerstone treatments of diabetes.

Children with diabetes have the same nutritional needs as a child without diabetes. A meal plan needs to be developed to meet the individual needs of the child, taking into consideration food preferences, cultural influences, family eating patterns and schedules, weight, activity level, and insulin action peaks. All family members can benefit from these healthy eating guidelines.

There are three major nutrients found in the food groups identified on the Food Guide Pyramid. The following information includes a summary of these nutrients (protein, carbohydrate and fat), their roles in the body, the food groups that contain them, and their impact on blood glucose.

Protein builds and repairs body tissues, and is important for normal growth and development. Eaten by itself, protein has little effect on blood glucose. Over the years, many popular bodybuilding and weight-loss regimens have over-emphasized the role protein plays in a healthy, well-balanced meal plan, and protein supplements in the form of powders or shakes are common. However, protein needs for even vigorous athletes can be easily met with everyday food sources. For people with diabetes, it is especially important to communicate with a physician or registered dietician if they are considering use of a protein supplement or any nutritional supplement, due to the potential impact on blood glucose levels.

Food Group Sources of Protein:

- ✧ Meat and Others
- ✧ Milk

Fats carry the flavor of our foods, and are a very concentrated source of energy for the body. They also slow the emptying time of the stomach after a meal. Eaten alone, fats have very little effect on blood glucose. As part of a mixed meal, fats may slow the absorption of carbohydrate, causing a more gradual rise in blood glucose.

Food Group Sources of Fats:

- ✧ Meat and Others
- ✧ Fats
- ✧ Sweets

Carbohydrates provide most of the energy we need to move, work and live. As such, the majority of calories consumed should come from carbohydrate sources, spaced appropriately throughout the day. Of all the food components, carbohydrates have the greatest effect on blood glucose. *The total amount of carbohydrate consumed has more of an effect on blood glucose than the type of carbohydrate.* The best way to regulate foods is carbohydrate counting.

Food Group Sources of Carbohydrates:

- ✧ Starch/Grain
- ✧ Fruit
- ✧ Milk
- ✧ Sweets

Meal planning for diabetes includes all the principles of good nutrition that are recommended for good health. People with diabetes are encouraged to choose a well-balanced diet with a controlled amount of carbohydrate at each meal and snack in order to help manage blood glucose. Healthy carbohydrates from starches, fruits and milk are encouraged daily. Sweets can be worked into a meal plan occasionally, as long as the carbohydrates they contain are accounted for, keeping in mind they are often sources of empty calories. This is true for any child or adult with or without diabetes.

Carbohydrate information can be obtained from many sources, including the Food Guide Pyramid, food labels, and any number of books that contain nutrient information on specific foods.

Special Nutrition Issues

- ✧ School Lunch: Children with diabetes may participate in school lunch program. Parents/guardians can review the school menu ahead of time and request modifications for their child as needed. Parents/guardians may also wish to contact the school food service director if needed for planning meals while in school. School lunch programs that use nutrient standard menu planning may be able to provide a breakdown of carbohydrates to assist with meal planning.

- ✧ After School: Children should have a convenient snack if staying after school. Parents/guardians should notify school personnel that the child may need to eat during the session and are responsible to provide the snack. A physician's order may also be necessary.

- ✧ School Parties: Children with diabetes should be included in school parties**;** however, it may require some proper planning before the party. Sweets can be eaten on a special occasion such as a birthday party or Halloween party. The carbohydrates should be included as part of the child's meal plan. The child's parent/guardian should provide a list of special occasions foods included in their meal plan if the parents/guardians have not supplied an alternate snack for their child.

- ✧ Field Trips: Whenever on a field trip, children should carry convenient snacks. Bus drivers and chaperones should be notified by the school staff that the child has diabetes and may need to eat a snack during the trip. Parents are responsible for providing the snack. (For information on general guidance for field trips, see page 20).

Following an Individualized Meal Plan

The nutritional needs of a student with diabetes do not differ from the needs of a student without diabetes. Both should eat a variety of foods to maintain normal growth and development. The major difference is that the timing, amount, and content of the food that the student with diabetes eats are carefully matched to the action of the insulin.

It is recommended that children see a Registered Dietitian, preferably a Certified Diabetes Educator, once a year to create an individualized meal plan based upon carbohydrate counting or an exchange system. The student's meal plan is designed to balance nutritional needs with the insulin regimen and physical activity level. There are usually no forbidden foods for people with diabetes. The meal plan should include 3 meals and 2-3 snacks with a specific amount of carbohydrate. The meals and snacks should be timed appropriately with the peak of the child's insulin. Each child needs a certain amount of carbohydrate based on age, size, gender and activity level.

Substitutes or modifications to school meals can only be made with appropriate documentation from the child's physician.

Carbohydrate counting involves calculating the number of grams of carbohydrate or choices of carbohydrate the student eats. This information, which can be obtained from nutrition information on food labels, is used to determine the amount of insulin the student needs to control blood glucose for any given meal or snack (See Appendix D on carbohydrate counting).

The exchange system groups foods in six different lists, each with a set nutritional value. A meal plan is prepared that recommends several exchanges or servings from each group for each meal and snack. The exchange list ensures that the meal plan is consistent in portion size and nutrient content while offering a wide variety of foods from each group. Students using this approach consume a prescribed number of exchanges at meal and snack times. The food groups are: bread/starchy foods; fruit; milk; vegetables; meat/protein foods; and fats.

With some insulin regimens, it is important to maintain consistency in the timing and content of meals and snacks. The student should eat lunch at the same time each day. Snacks are often necessary for a child with diabetes and must be eaten to balance the peak times of insulin action. A missed or delayed snack could result in hypoglycemia. The student also must have immediate access to a quick-acting form of glucose, such as juice or glucose tabs or gel.

A missed or delayed snack could result in hypoglycemia.

3. Physical Activity

Physical activity is an important part of the overall management of diabetes. The benefits of physical activity include cardiovascular fitness, long-term weight control, social interaction and the promotion of self-esteem fostered by team play. Additionally, physical activity can help to lower blood glucose.

Physical activity is a fundamental part of a healthy lifestyle for all children including those with diabetes. Children with diabetes can participate in gym class and after school sports. Health care providers may suggest adjustments in medication and food for appropriate blood glucose control. Physical education instructors and sports coaches must be able to recognize and assist with the treatment of hypoglycemia. Families are encouraged to include more physical activity at home.

General Physical Activity Guidelines:

1. Drink lots of sugar-free fluids, especially water.
2. Have rapid acting carbohydrate sources available.
3. Test blood glucose before, during and after physical activity.
4. Wear a diabetes ID.
5. To avoid low blood glucose, eat more carbohydrate or follow your health care provider's recommendations about reducing the amount of insulin prior to physical activity.

Carbohydrate Replacement for Physical Activity

Blood glucose should be checked according to the physician's recommendations so that proper measures can be taken to keep the level in the appropriate range. The following chart illustrates the action that should be taken to maintain blood glucose safely with physical activity.

The following chart is guidelines for students with both Type 1 and Type 2 diabetes requiring insulin for management of their diabetes.

Type of Activity:	If Blood Glucose Prior to Activity is:	Then Eat the Following Carbohydrate Before Activity:
Short Duration Less than 30 minutes	Less than 100	15 grams carbohydrate
	Greater than 100	No carbohydrate necessary
Moderate Duration 1 hour	Less than 100	25-50 grams carbohydrate plus protein source
	100-180	15 grams carbohydrate
	180-240	No carbohydrate necessary
Strenuous 1-2 hours	Less than 100	50 grams carbohydrate plus protein source
	100-180	25-50 grams carbohydrate plus protein source
	180-240	15 grams carbohydrate

Note: If Blood glucose is above 240, physical activity should be restricted.

4. Planning Beyond the School Day

Meeting the needs of students with diabetes requires advance planning for special events such as classroom parties, field trips, and school-sponsored extracurricular activities held before or after school. With proper planning students with diabetes can participate fully in all school-related activities.

While there are no forbidden foods for children or teens with diabetes, school parties often include foods high in carbohydrates and fats. Providing more nutritious snacks will be healthier for all students and encourage good eating habits. The parents/guardian should decide whether the student with diabetes should be given the same food as other students or food the parents provide. Parents should be given advance notice of parties to incorporate special foods in the meal plan or to adjust the insulin regimen.

With proper planning students with diabetes can participate fully in all school-related activities

Students often view a field trip as one of the most interesting and exciting activities of the school year, and students with diabetes must be allowed to have these school-related experiences.

Students with diabetes often need support from an adult on school trips. Although it is not unusual to invite parents to chaperone field trips, parental attendance is not a prerequisite for participation by the student with diabetes. If the parent does not accompany their child on the field trip, the school nurse needs to determine the level of health care needed on this trip and whether or not it is necessary for a nurse to participate. Often a nurse is not needed on the trip; however, school personnel need to be properly trained to accompany the student with diabetes off-site and ensure that all the student's supplies are brought along with the student. This includes snacks and supplies to treat hypoglycemia.

The plan for coverage and care during extracurricular activities sponsored by the school that take place outside of school hours should be carefully set out in the student's IHCP, 504 plan, IEP, or other education plan. As with field trips, personnel must be trained to ensure student safety and respond to routine and emergency care.

Transportation Issues

Similar to other school activities away from the school building, advanced planning is necessary for meeting the needs of a student with diabetes while being transported to and from school. School bus drivers need to be aware that they often may have students with health care needs riding the buses and should be educated on diabetes and, in particular, the signs of hypoglycemia. School bus drivers also need to understand how to handle an emergency. The IHCP and ECP should address how emergencies will be managed on school transportation. In most situations, this plan will allow for the student to have access to food on the bus if needed and their supplies and equipment.

5. Social and Emotional Aspects of Diabetes

The diagnosis of diabetes in a child can have a significant impact on the entire family. In many cases, the diagnosis of diabetes, like other chronic health diseases, is a major event for both the child and the family. Each individual in the family is affected and feelings experienced often follow a similar pattern although all reactions are unique and may occur at different times for different families. These feelings may linger for a long time if they are not recognized and expressed. Dealing with feelings openly can help the child and the family learn to face the daily challenges and facilitate acceptance of having diabetes as part of their family. The feelings described are often present in all families who have a child with diabetes.

Denial

"This can't really be happening." *"I don't need to take my insulin today."*
"It's not that serious." *"No one has to know I have diabetes."*

The child or family member may find it difficult to even talk about diabetes. It may be too painful to face. This can interfere with the medical team's ability to educate and treat the child. At times, the child or the parent/guardian may try to hide their feelings to be "strong" or not to upset the others. This denial may make the child's ability to adjust to the daily struggles much more difficult.

Sadness

The child or family member may cry, feel depressed, or hopeless. Feeling sad is normal, and brief periods of sadness can occur for years after diagnosis. It is important for the child or family member to express their sadness and to openly share their feelings. They should be encouraged to seek professional help if they feel depressed or hopeless for a long period of time.

Anger

"Why me? or Why my child?"
"Why do I have to do it all?"
"It isn't fair!"

Anger may be vented toward nurses, doctors, God, spouse, friends, siblings, teachers, the list is endless. Although this also is a normal feeling, it may interfere with the child or the family member's ability to adjust to the daily pressures of managing diabetes. If it is having a major impact on the child or the family as a unit, individual counseling may be helpful.

Fear

"What will this mean for my child's life?"
"What's going to happen?"
"How can we ever leave him alone?"

There are so many fears that are expressed by the family and the child. Parents/guardians fear the increase in responsibility and the expenses. They worry about the future, and doubt their ability to manage diabetes every day. Siblings fear they may "get" diabetes too. The child with diabetes fears hospitals, injections, finger sticks, low blood sugars and even death. He/she may fear being different from friends. All these fears are certainly justified, but can be allayed if they are openly discussed and support is given as needed.

Guilt

"What did I do to deserve this?"
"If I just hadn't eaten so much sugar."
"The diabetes may have come from my side of the family."

Parents/guardians commonly feel that they "gave" their child diabetes. This idea often persists even though we know other factors also play a role in the onset of diabetes. The child may feel diabetes is a punishment for bad behavior. Such feelings are very common at the time of diagnosis. As time goes on, the child feels guilty if he/she "sneaks" extra candy, skips doing blood tests, lies about blood glucose results or does not "follow the rules." Parents/guardians feel guilty whenever they have to enforce the "rules" of self-management or deny their child a "treat". The opportunities to feel guilty are always there. Parents/guardians and children need to be supported in their efforts each day.

Acceptance

"I don't like having diabetes but I guess I can handle it."
"The shots aren't so bad, I just wish I could eat whatever I want."

This stage may take a long time to reach and some may never come to accept diabetes as part of their life. A well-adjusted family learns to cope with the endless demands and struggles diabetes can add to their life. They feel more confident and hopeful. Sadness and anger may still occur but these periods are temporary. The family needs to seek out resources in the community and within their family to ease the burden of daily management. Dealing with all of these emotions can be a challenge for the family with diabetes. They must come to the understanding that diabetes should not prevent a child from living a full and active life. They are not alone. There are many resources available in the community and many other families traveling the same road.

Factors Causing Emotional Distress at Diagnosis of Diabetes in a Child

- ✧ Uncertainty about the outcome of the immediate situation.
- ✧ Feelings of intense guilt and anger about the occurrence of diabetes.
- ✧ Feelings of incompetence and helplessness about the responsibility for managing the illness.
- ✧ Loss of valued life goals and aspirations because of illness.
- ✧ Anxiety about planning for an uncertain future.
- ✧ Recognition of the necessity for a permanent change in living

Adults must recognize that responsibilities related to diabetes depend not just on age, but also on the development of the individual as well as the circumstances at individual schools.

6. Promoting Student Independence

While it is very important to provide students with assistance and supervision of their diabetes care as needed, it is equally important to enable students to take on the responsibility of learning diabetes self-management and control. Age alone should not be the guideline used to assume that a child is ready to accept responsibility for managing components of diabetes care. It is important to realize that children develop at different rates. There is no such thing as a "magic age" when a child suddenly can perform a certain skill or be "responsible" for their own care.

Student ability to participate in self-care also depends upon their willingness to do so. As students are ready, they can assume more responsibility for their care. Children need to be encouraged and supported to gradually assume diabetes self care as they mature and demonstrate confidence. The adult must be sure that when the responsibility is given that the child is willing to take it. Keep in mind that a child's ability or desire to perform certain diabetes related tasks might vary from day to day. It is normal for the child to regress and depend once again on an adult to handle the responsibility. Parents, school nurses, relatives and other reliable adults must be sensitive to the child's needs and be available to take over with no questions asked.

A student's health care provider must provide a written order stating the need and the capability of the student to conduct self-testing. Such an order will permit a student to self-test their blood glucose while at school or at school sponsored activities. The school nurse and/or other school personnel should collaborate with the student and family to ensure that the personnel should collaborate with the student and family to ensure that the student's ability to self-test will result in effective diabetes management and complies with OSHA's Universal Precautions.

Student competence and capability for performing diabetes-related tasks are determined by the school team and the parents/guardians. Diabetes care depends upon self-management. Ultimately, each person with diabetes becomes responsible for all aspects of self-care, including blood glucose monitoring and insulin administration. Regardless of their level of self-management, however, all students with diabetes may require assistance when blood glucose levels are out of the target range.

To help determine how much responsibility a student with diabetes can handle, it helps to be aware of different stages in normal childhood development. Adults must recognize that responsibilities related to diabetes depend not just on age, but also on the development of the individual as well as the circumstances at individual schools. The charts below provide guidelines for determining the *average* age for assuming diabetes related skills. These are general recommendations, but each child must be evaluated individually. Independence takes a long time and requires a lot of help and supervision from adults. The child who feels that he or she has a network of adults to support and assist with diabetes management will generally maintain better diabetes control.

General Guidelines: Age-Appropriate Responsibilities		
Age	**Developmental Characteristics**	**Diabetes-Related Responsibility**
3-7 years	✧ Imaginative/concrete thinkers ✧ Cannot think abstractly ✧ Self-centered	✧ Parent supervision for all tasks ✧ Is generally cooperative for blood glucose tests and insulin shots ✧ Inconsistent with food choices ✧ Gradually learns to recognize hypoglycemia ✧ Not much concept of time
7-12 years	✧ Concrete thinkers ✧ Capable of more logic and understanding ✧ More curious ✧ More social ✧ More responsible	✧ Can learn to test blood glucoses ✧ At age 10 or 11, can draw up and give shots on occasion ✧ Can make own food choices ✧ Can recognize and treat hypoglycemia ✧ By 11 or 12 years, can be responsible for remembering snack, but may still need reminders. Alarm watches may promote independence.
12-18 years	✧ More independent ✧ Behavior varies ✧ Body image important ✧ Away from home more ✧ More responsible ✧ Capable of abstract thinking	✧ Capable of doing the majority of shots and blood tests but may still needs some parental supervision and review at times to make decisions about dosage ✧ Knows which food to eat ✧ Gradually recognizes the importance of good sugar control to prevent later complications ✧ May be more willing to inject multiple shots per day

F. Diabetes Management Training for School Personnel

Diabetes management training teaches school nurses and staff members how to provide necessary care for students with diabetes during the school day and school-sponsored extracurricular activities. Training should occur when a student is diagnosed with diabetes, when a student with diabetes is enrolled in the school, or when appropriate. Training should be ongoing and include regular refresher sessions.

Suggested Components:

- ✧ Introduction to the child's IHCP
- ✧ Type 1 and 2 diabetes: what it is, how it is managed (if not covered at planning meeting)
- ✧ Monitoring tools: blood glucose monitor, written records, etc.
- ✧ Signs and symptoms of hypoglycemia and hyperglycemia
- ✧ Procedures for routine care of the individual student
- ✧ Emergency procedures
- ✧ Overview of universal health and safety guidelines (OSHA) and disposal of supplies
- ✧ Monitoring techniques (for those who may do finger sticks or arm sticks)

Following the initial training, school nurses often provide the ongoing training needs of staff and the student (See Appendix A for staff training record).

SECTION TWO

Frequently Asked Questions

1. What is the citation in the law that indicates who can perform nursing tasks and/or administer medications to students?

Section 20-87a of Chapter 378 of the Connecticut general statutes (The Nurse Practice Act) states that only registered nurses may execute medical regimens. Section 20-87c indicates that licensed practical nurses may perform selected tasks and share responsibility under the direction of a registered nurse or advanced practice registered nurse.

Section 10-212a of Chapter 169 of the Connecticut general statues allows a school nurse or any other nurse licensed pursuant to the provisions of chapter 378 to administer medications to students in schools. In addition **§ 10-212a,** amended by Public Act 03-211, allows, in the absence of a school nurse, the principal, any teacher, licensed physical or occupational therapist, or coach of intramural and interscholastic athletics of a school to administer medicinal preparations, including such controlled drugs as the Commissioner of Consumer Protection may, by regulation, designate, to any student at such school pursuant to the written order of a physician licensed to practice medicine or a dentist licensed to practice dental medicine in this or another state, or an advanced practice registered nurse licensed to prescribe in accordance with **§ 20-94a**, or a physician assistant licensed to prescribe in accordance with **§ 20-12d**, and the written authorization of a parent or guardian of such child. **§10-212a (as amended by P.A. 03-211)** designates the State Board of Education in consultation with the Commissioner of Public Health as the entity to adopt regulations that specify conditions under which a coach of intramural or interscholastic athletics may administer medication to a child participating in such intramural or interscholastic athletics. **§ 10-212a (as amended by P.A. 03-211)** allows a school paraprofessionals to administer medication to a specific student with a medically diagnosed allergic condition that may require prompt treatment in order to protect the student against serious harm or death.

2. Can an LPN provide school health services including diabetic care as long as supervision is provided?

Yes. LPNs may be hired to perform nursing tasks permitted in the LPN scope of practice under the direction of a school nurse. The tasks must be part of an individual nursing care plan that is developed, maintained and evaluated by a school nurse.

3. How should school districts handle the issue of medications when students go on field trips or participate in after-school activities?

Connecticut state law allows a number of trained school employees to administer oral, topical and inhalant medications to students who cannot self-administer medications. Non-licensed personnel may only administer injectable medication to students who have a medically diagnosed allergic condition. For other students who need injectable medications and cannot self-administer, a number of options are available:

- ✧ The parent or guardian may attend the activity and administer the medication; or
- ✧ The student's health care provider can be consulted and may order the medication time to be adjusted or the dose eliminated; or
- ✧ The school may send a school nurse, substitute school nurse or LPN on the field trip to administer the medication.

A child may not be prevented from participating in an educational activity, such as a field trip, solely on the basis of a special health need. Even if no medication is needed during the field trip, the school must have trained personnel who can respond to an emergency.

4. How should school districts handle the need for nursing procedures when students go on field trips or participate in after-school activities?

When a student is unable to perform a necessary health-related task independently and the task is a nursing procedure, the school nurse has to participate or the school nurse may delegate the task to an appropriate, trained unlicensed person. To delegate this task the nurse feels it is appropriate to delegate that particular task for that particular student to that particular staff member(s), the identified staff member is willing to assume the task and the task does not require nursing judgment.

5. Must all children with special health care needs have an individualized health care plan (IHCP)?

An IHCP, a plan of care for a child with health needs, is not required by law, but is customarily used in nursing practice and is recommended for all students with special health care needs who require care for their health care needs. The IHCP may be a stand-alone plan developed by the nurse in consultation with a team that includes a parent or guardian, the health care provider, teachers and others responsible for the student, or it may be a part of an Individualized Education Plan or 504 Plan.

6. Are school districts authorized to employ Emergency Medical Technicians (EMTs) to provided health care to children with special health care needs in the absence of the school nurse?

No. The definition of services that may be provided by EMTs allows these individuals to function as EMTs only when they are working as members of the emergency medical system. An EMT may not be hired to provide nursing procedures, including medication administration, to children with special health care needs. An EMT who has been hired as a health aide must work within the scope of the health aide job description and be trained as a health aide.

7. If a non-licensed individual takes a course that certifies him/her to give medications in the home, can that person give medications in the school setting?

No. Medication administration in schools is governed by **§10-212a** of the C.G.S.

8. Can a non-licensed person, who receives appropriate training, administer medications?

Yes. A full time school employee who meets the criteria of **§10-212a** and has been appropriately trained by the school nurse for the specific student and medication may administer oral, topical, and inhalant medications.

9. Can the school nurse provide training to non-licensed persons to administer injectable medications in anticipation of an emergency?

According to §10-212a-2(e) Non-licensed persons may administer injectable medications only to students who have been medically diagnosed with an allergic condition, which may require prompt treatment to protect the student against serious harm or death.

10. What procedures should be followed when a nurse working in a school building is employed by another agency (i.e. private duty nurse for a child with special health care needs)?

Procedures that govern health care for students, including care provided by nurses from outside agencies, should be established by school district policy. Procedures should address situations where: 1) there is a school nurse in the building, 2) there is no school nurse in the building.

- ✧ If the nurse is hired by the school district there should be a contract with the agency in place. The agency is responsible for assuring that the nurse has a valid license and the expertise to perform the functions required.
- ✧ The school district should have all the required orders and authorizations in place.

The agency nurse and school nurse should work together to develop a plan to assure that the student's health needs will be met (i.e., an emergency). However the school nurse should never be expected to substitute for the agency nurse in providing constant care of the student or to supervise a nurse who is not employed by the district. Agency nurses should be expected to abide by the health and administrative policies of the district (i.e., notification to the school nurse or administrator when in the building, evacuation and emergency procedures, etc.). Procedures should be established for the school nurse to follow if the school nurse determines that an agency nurse is performing a procedure in an unsafe way. Agency nurses assigned to care for a specific student should not be expected to substitute for the school nurse.

11. Where can districts get training information and resources on school health issues?

Many hospitals in the state provide training, information and resources. Connecticut Children's Medical Center, Hospital for Special Care, University of Connecticut John Dempsey Medical Center and Yale University and Hospital may be able to guide school districts in the right direction. The State Department of Education is an additional resource. Regional Education Service Centers (RESCs) can be helpful in providing consultation, technical support and training. Some colleges offer continuing education related to school health.

SECTION THREE

Suggested Roles and Responsibilities of School Personnel

The following suggested roles and responsibilities were adopted from *Helping the Student with Diabetes Succeed* from the National Diabetes Education Program. School districts may find them helpful in understanding the roles and responsibilities of the various school personnel who may be involved in creating a safe learning environment for students with diabetes. As noted in the introduction, the school health team, which includes the school personnel mentioned in the following pages, plays an important role in helping students manage their diabetes.

Actions for the School District Administrator

(Superintendent, Director, 504 Coordinator, or other administrative personnel)

- ✓ Provide leadership in developing district policy related to all aspects of diabetes management at school, including staff training, medication administration policy, and blood glucose monitoring
- ✓ Support implementation of district policy regarding diabetes management, and ensure ongoing quality improvement
- ✓ Understand and implement the federal and state laws that apply to diabetes where applicable
- ✓ Allocate sufficient resources to helping students manage diabetes
- ✓ Monitor schools attended by students with diabetes for compliance with district policy
- ✓ Respect the student's confidentiality and right to privacy
- ✓ Learn about diabetes

Actions for the Principal, School Administrator, and/or Designee

- ✓ Participate in developing and implementing school policy on diabetes management
- ✓ Allocate sufficient resources to helping students manage diabetes
- ✓ Develop and implement a system to inform school health services of the pending enrollment of a student with diabetes
- ✓ Promote a supportive learning environment for students with diabetes
- ✓ Meet annually with the school health team, including the student, family, school nurse, teachers and others, to discuss accommodations needed
- ✓ Identify all staff members who have responsibility for the student with diabetes
- ✓ Arrange for diabetes management training for the school nurse and other staff with responsibility for students with diabetes
- ✓ Alert all school-staff members who teach or supervise a student with diabetes about accommodations and emergency procedures.
- ✓ Alert all substitute personnel and others (e.g. the bus driver) so that they are familiar with emergency procedures for the student
- ✓ Implement school policy on availability of health services
- ✓ Work with the school health team to implement the student's written plans
- ✓ Respect the student's confidentiality and right to privacy
- ✓ Help to develop and implement on-campus and off-campus emergency protocols
- ✓ Include diabetes awareness as part of health or cultural education
- ✓ Support and facilitate ongoing communication between parent/guardians of students with diabetes and school staff
- ✓ Learn about diabetes
- ✓ Be able to recognize and respond to signs and symptoms of hypoglycemia and hyperglycemia
- ✓ Understand federal and state laws where applicable

Actions for the School Nurse

- ✓ Obtain and review the student's current diabetes medical plan from the student's physician and pertinent information from the student and family
- ✓ Facilitate the initial school health team meeting
- ✓ Conduct a nursing assessment of the student and develop a nursing care plan that incorporates the student's diabetes care regimen as prescribed by the student's diabetes medical management plan or healthcare provider's orders
- ✓ Conduct ongoing, periodic assessments of the students with diabetes and update the nursing care plans
- ✓ Coordinate development of the student's Emergency Care Plan (ECP) and provide copies to staff members who have responsibility for the student throughout the school day (e.g. teachers, counselor, PE instructor, and lunchroom staff)
- ✓ Obtain materials and medical supplies necessary for diabetes care tasks from the parents/guardians and arrange a system for notifying the student or parents/guardian when supplies need to be replenished
- ✓ Plan and implement diabetes management training for appropriate staff
- ✓ Participate in diabetes management training
- ✓ Review information about diabetes in this guide
- ✓ Perform routine and emergency diabetes care tasks, including blood glucose monitoring, urine ketone testing, insulin administration, and glucagon administration
- ✓ Practice universal precautions and infection control procedures during all student encounters
- ✓ Maintain accurate documentation of contacts with students and family members
- ✓ Collaborate with other co-workers, e.g. food service and school bus transportation services, as necessary to provide appropriate health care services
- ✓ With parental permission, act as liaison between the school and the student's health care provider regarding the student's self-management at school.
- ✓ Communicate to parents/guardians any concerns about the student's diabetes management or health, such as acute hypoglycemia episodes, hyperglycemia, general attitude, and emotional issues.
- ✓ Promote and encourage independence and self-care consistent with the student's ability, skill, maturity, and developmental level
- ✓ Respect the student's confidentiality and right to privacy
- ✓ Act as an advocate for students to help them meet their diabetes health care needs
- ✓ Provide education and act as a resource on managing diabetes
- ✓ Assist the classroom teacher with developing a plan for substitute teachers
- ✓ Assist the PE instructor with managing the student's exercise program at school
- ✓ Be knowledgeable about federal, state, and local laws and regulations that pertain to managing diabetes at school
- ✓ Assist student with blood glucose monitoring prior to dismissal

Actions for the Teacher

- ✓ Participate in school health care team meetings
- ✓ Work with school health team to implement written care plans
- ✓ Recognize that a change in the student's behavior could be a symptom of blood glucose changes
- ✓ Be prepared to recognize and respond to the signs and symptoms of hypoglycemia and hyperglycemia
- ✓ Provide a supportive environment for the student to manage diabetes effectively and safely at school, which includes eating snacks for routine diabetes management and to treat low blood glucose levels, having bathroom privileges and access to drinking water, monitoring blood glucose, and administering insulin and other medications
- ✓ Provide classroom accommodations for the student with diabetes
- ✓ Provide instruction to the student if it is missed because of absence for diabetes-related care
- ✓ Provide information on accommodations and policies, location of supplies, the student's emergency care plan and other aspects of diabetes management to substitute teachers
- ✓ Notify the parents/guardians in advance of changes in school schedule, such as class parties, field trips, and other special events
- ✓ Communicate with the school nurse, and parents regarding any concerns about the student
- ✓ Learn about diabetes and if necessary, attend diabetes management trainings
- ✓ Treat the student with diabetes the same as other students, except to meet medical needs
- ✓ Respect the student's confidentiality and right to privacy

Actions for the Coach and Physical Education Instructor

- ✓ Encourage exercise and participation in physical activities and sports for students with diabetes, as well as for other students
- ✓ Treat the student with diabetes the same as other students, except to meet medical needs
- ✓ Encourage the student to have personal supplies readily accessible
- ✓ Allow the student to check blood glucose levels
- ✓ Understand and be aware that hypoglycemia can occur during and after physical activity
- ✓ Recognize that a change in the student's behavior could be a symptom of blood glucose changes
- ✓ Be prepared to recognize and respond to the signs and symptoms of hypoglycemia and hyperglycemia
- ✓ Provide the student with immediate access to a fast-acting form of glucose to treat hypoglycemia if necessary
- ✓ Consider taping a fast-acting form or glucose (3 or 4 glucose tablets or hard candies) to a clipboard or include it in the First Aid pack
- ✓ Learn about diabetes
- ✓ Provide input to the student's school health team as needed
- ✓ Communicate with the school nurse regarding any observations or concerns about the student
- ✓ Provide information to substitute PE instructors
- ✓ Respect the student's confidentiality and right to privacy

Actions for the Food Service Manager/Staff, or Lunchroom Monitor

- ✓ Obtain a copy of the student's written individualized meal plan
- ✓ Obtain a copy of the student's Emergency Care Plan and keep it in a known, yet secure, place in the lunchroom
- ✓ Provide a lunch menu and lunch schedule in advance to parents. If available, also include the nutrition content of menu selections including grams of carbohydrate and fat
- ✓ Understand and be aware that hypoglycemia can occur before lunch
- ✓ Encourage student to eat appropriate foods based on the student's individualized meal plan
- ✓ Be prepared to recognize and respond to the signs and symptoms of hypoglycemia and hyperglycemia according to the student's emergency care plan
- ✓ Learn about diabetes
- ✓ Recognize that a change in the student's behavior could be a symptom of blood glucose changes
- ✓ Learn about the various kinds of diabetes meal and snack plans, and which type of meal plan the student follows
- ✓ Recognize that eating meals and snacks on time is a critical component of diabetes management, and that failure to eat lunch on time could result in low blood glucose, especially if a student has missed a morning snack or has had a physically strenuous or otherwise active morning at school
- ✓ Know where supplies to treat hypoglycemia are kept
- ✓ Treat the student with diabetes the same as other students, except to meet medical needs
- ✓ Provide input to the student's school health team when requested
- ✓ Communicate with the school nurse regarding any concerns about the student
- ✓ Respect the student's confidentiality and right to privacy

Actions for the Guidance Counselor or School Psychologist

- ✓ Work with school staff to promote a supportive learning environment
- ✓ Ensure that the student with diabetes is treated the same as students without diabetes, except to respond to medical needs
- ✓ Be aware of and be prepared to respond to the emotional needs of the student
- ✓ Recognize that students with chronic illnesses such as diabetes may rebel by discontinuing all or part of their medical regimen
- ✓ Be aware that some students may not wish to share information about their diabetes with other students or school staff, particularly if it makes them feel different from others
- ✓ Promote and encourage independence and self-care that are consistent with the student's abilities, skill, maturity, and development
- ✓ Learn about diabetes
- ✓ Provide input to the student's school health team as appropriate
- ✓ Communicate with the school nurse regarding any concerns about the student
- ✓ Respect the student's confidentiality and right to privacy

Actions for Parents or Guardians

- ✓ Inform the school principal that your child has diabetes
- ✓ Provide accurate and emergency contact information and ensure it is always up to date
- ✓ Provide the Diabetes Medical Plan, signed by the physician, to the school nurse
- ✓ Attend and participate in initial and annual meetings of the school health team
- ✓ Provide specific information about your child's diabetes
- ✓ Permit sharing of medical information necessary for the student's safety between the school and the student's personal health care providers
- ✓ Inform the school staff of any changes in the student's health status
- ✓ Provide all supplies, equipment, and snacks necessary for implementing your child's diabetes management
- ✓ Provide and maintain all supplies, equipment, and snacks necessary to accommodate the student's long-term needs in case of an emergency
- ✓ Inform appropriate school staff when the student plans to participate in school-sponsored activities that take place before or after school so that health care coverage can be coordinated to ensure the health and safety of the student with diabetes
- ✓ Understand federal, state, and local laws that address the school's responsibilities to students with diabetes.

Actions for the Student with Diabetes

- ✓ Participate in the school meeting regarding your diabetes management
- ✓ Always wear a medical alert ID and carry a fast-acting source of glucose
- ✓ Tell teachers and other school staff members if you feel symptoms of low or high blood glucose, especially if you need help
- ✓ Work with school staff members if you need help checking your blood glucose, getting insulin, or eating the right amount of food at the right time during the school day
- ✓ Take charge of your diabetes care at school if your written plans include:
    - checking and writing down blood glucose levels
    - figuring out the right insulin dose
    - giving yourself insulin
    - properly disposing of needles, lancets, and other supplies after use
    - eating meals and snacks as planned
    - treating low blood sugar
    - carrying diabetes equipment and supplies with you at all times

RESOURCES

American Academy of Family Physicians (AAFP)
The AAFP is the national member organization of family doctors. Its website includes articles about the link between obesity and diabetes in young people and how to help children lose weight.

11400 Tomahawk Creek Parkway
Leawood, KS 66211
Phone: (913) 906–6000
www.aafp.org

American Academy of Pediatrics (AAP)
The AAP is a professional membership organization committed to the attainment of optimal physical, mental, and social health and well-being for all infants, children, adolescents, and young adults.

141 Northwest Point Boulevard
Elk Grove Village, IL 60007–1098
Phone: (847) 434–4000
www.aap.org

American Association for Health Education (AAHE)
The AAHE serves health educators and other professionals who promote the health of all people through education and other systematic strategies. Programming focuses on health promotion in schools (K-12), health care, public and community agencies, business/industry, and professional preparation. AAHE is one of six national associations within the American Alliance for Health, Physical Education, Recreation and Dance.

1900 Association Drive
Reston, VA 20191
Toll-free: 1–800–213–7193, Ext. 437
www.aahperd.org/aahe

American Association of Diabetes Educators (AADE)
The AADE is a multidisciplinary organization for health professionals who provide diabetes education and care. The AADE website provides diabetes links, including information about diabetes in children and adolescents.

100 West Monroe Street, Suite 400
Chicago, IL 60603
Toll-free: 1–800–TEAM–UP4
(1–800–832–6874)
www.aadenet.org

American Council on Exercise (ACE)
The ACE is a nonprofit organization that promotes active, healthy lifestyles and their positive effects on the mind, body, and spirit. Its programs are directed to youths as well as adults.

4851 Paramount Drive
San Diego, CA 92123
Phone: (858) 535–8227
www.acefitness.org

American Diabetes Association (ADA)
The ADA's mission is to prevent and cure diabetes and improve the lives of people with diabetes. Founded in 1940, the association conducts programs in all 50 states and the District of Columbia, reaching hundreds of communities across the country. The ADA is a nonprofit organization that provides diabetes research, information and advocacy. The association offers a variety of programs focused on young people with diabetes.

306 Industrial Park Rd. #105
Middletown, CT 06457
1-877-639-0385
www.diabetes.org
For information about ADA's training curriculum for school personnel:
www.diabetes.org/schooltraining

American Dietetic Association (ADA)
The ADA is a member organization for registered dietitians and registered technicians representing special interests, including public health, sports nutrition, medical nutrition therapy, diet counseling for weight control, cholesterol reduction, and diabetes. More than 5,000 dietitians now belong to the ADA's specialty group on Diabetes Care and Education.

120 South Riverside Plaza, Suite 2000
Chicago, IL 60606–6995
Toll-free: 1–800–877–1600
Consumer referral: 1–800–366–1655
www.eatright.org

American Heart Association
This Web site is filled with important information about type 2 diabetes, insulin resistance, and related cardiovascular risks -- as well as ways you can reduce your chances of heart disease and other complications of diabetes. Plus, there's special information on our *Heart of Diabetes Thrivers Program*. We even have special sections of *Fun Stuff, My Diabetes Tools*, and even a "*Meet Our Celebrity*" section.

7272 Greenville Avenue
Dallas, TX 75231
1-800-AHA-USA1 (242-8721)
www.americanheart.org

American Medical Association (AMA)
The AMA is the nation's leader in promoting professionalism in medicine and setting standards for medical education, practice, and ethics. As the largest physician membership organization in the United States, the AMA is at the forefront of every major development in medicine and is a steadfast and influential advocate for physicians and their patients. The AMA works tirelessly to promote the art and science of medicine and the betterment of public health.

American Medical Association Science, Quality and Public Health Group
515 N. State Street
Chicago, IL 60610
Phone: (312) 464–4908
www.ama-assn.org/

American Podiatric Medical Association, Inc. (APMA)

The APMA is the premier professional organization representing the nation's Doctors of Podiatric Medicine and is committed to advancing the profession of podiatric medicine for the benefit of its members and the public by ensuring the highest quality foot and ankle care.

APMA
9312 Old Georgetown Rodad
Bethesda, MD 20814-1621
Telephone: 1-800-FOOTCARE
http://www.apma.org

American School Health Association (ASHA)

The mission of the ASHA is to promote and improve the well-being of children and youth by supporting comprehensive school health programs. In addition to a journal, the association produces a book for school nurses and families on managing school-age children with chronic health conditions.

Route 43, P.O. Box 708
Kent, OH 44240
Phone: (330) 678–1601
www.ashaweb.org

Centers for Disease Control and Prevention (CDC)

The CDC serves as the national focus for developing and applying disease prevention and control, environmental health, and health promotion and education activities designed to improve the health of the people of the United States. CDC divisions with special relevance to diabetes in students are the Division of Diabetes Translation, the Division of Nutrition and Physical Activity, and the Division of Adolescent and School Health.

4770 Buford Highway, NE
Atlanta, GA 30341
Toll-free: 1–800-311–3435
www.cdc.gov

Division of Diabetes Translation

Toll-free: 1–877–CDC–DIAB
(1–877–232–3422)
www.cdc.gov/diabetes

Division of Nutrition and Physical Activity

www.cdc.gov/nccdphp/dnpa

Division of Adolescent and School Health

www.cdc.gov/nccdphp/dash

Children with Diabetes

This is an on-line community for kids, families and adults with diabetes. It is easy to navigate and provides a wealth of information on the basics, management in school, treatments, research and more.
www.childrenwithdiabetes.com

Connecticut Association of Diabetes Educators (CADE)

The Connecticut chapter of the AADE is dedicated to improving the quality of diabetes education, care and services to people with diabetes by enhancing the competence of diabetes educators and facilitating interaction and communication among diabetes educators.
www.cadeonline.org

Connecticut Children's Medical Center (CCMC)

Department of Endocrinology
Karen Bucci, APRN
1-860-545-9370
www.ccmckids.com

Disability Rights Education and Defense Fund (DREDF)

DREDF is a national law and policy center dedicated to protecting and advancing the civil rights of people with disabilities through legislation, litigation, advocacy, technical assistance, and education and training of attorneys, advocates, persons with disabilities, and parents and children with disabilities.

2212 Sixth Street
Berkeley, CA 94710
Phone: (510) 644–2555
www.dredf.org

Diabetes Exercise and Sports Association

This nonprofit service organization is dedicated to enhancing the quality of life for people with diabetes through exercise.

1647-B West Bethany Home Road
Phoenix, AZ 85015
Toll-free: 1–800–898–4322
www.diabetes-exercise.org

Educational Resources Information Center (ERIC)

The ERIC is a federally funded, nonprofit information network designed to provide ready access to education literature for teachers and parents.

1307 New York Avenue, NW, Suite 300
Washington, DC 20005–4701
Toll-free: 1–800–822–9229
www.eric.ed.gov

5 A Day for Better Health Program

The national 5 A Day for Better Health Program gives Americans a simple, positive message—eat 5 or more servings of fruits and vegetables every day for better health. The program is jointly sponsored by the National Cancer Institute (NCI) and the Produce for Better Health Foundation (PBH), a nonprofit consumer education foundation representing the fruit and vegetable industry. The National Cancer Institute funds behavior change and communications research to determine strategies that are effective to increase fruit and vegetable consumption.
www.5aday.gov

The Foundation of the American Academy of Ophthalmology Diabetes Project

P.O. Box 42998
San Francisco, CA 94142-9098
1-800-222-EYES (3937)
www.ihs.gov/medicalprograms/diabetes

Indian Health Service (IHS)
IHS National Diabetes Program
The mission of the IHS is to develop, document, and sustain a public health effort to prevent and control diabetes in American Indian and Alaskan Native communities.

5300 Homestead Road, NE
Albuquerque, NM 87110
Phone: (505) 248–4182
www.ihs.gov

Insulin Pumpers
Insulin Pumpers provides information and support for adults and children with diabetes and their families interested in insulin pump therapy. There is a special section devoted to children with diabetes and the stories about how an insulin pump has changed their lives.
www.insulin-pumpers.org

Joslin Diabetes Center
The Joslin Diabetes Center and its affiliates offer a full range of services for children and adults with diabetes, including programs to help youngsters with diabetes and their families manage the disease.

1 Joslin Place
Boston, MA 02215
Toll-free: 1–800–JOS–LIN1 (1–800–567–5461)
www.joslin.harvard.edu

Juvenile Diabetes Research Foundation International (JDRF)
The mission of JDRF is to find a cure for diabetes and its complications through the support of research.

120 Wall Street
New York, NY 10005–4001
Toll-free: 1–800–533–CURE (1–800–533–2873)
www.jdrf.org

National Association of Elementary School Principals (NAESP)
The NAESP promotes advocacy and support for elementary and middle level principals and other education leaders in their commitment to all children.

Linkages to Learning
1615 Duke Street
Alexandria, VA 22314
Toll-free: 1–800–38–NAESP (1–800–386–2377)
www.naesp.org

National Association of School Nurses (NASN)
The NASN is a nonprofit organization that represents school nurses; it offers continuing education, issues briefs, holds an annual conference, and provides legislative updates and position statements, and other materials.

1416 Park Street, Suite A
Castle Rock, CO 80109
Toll-free: 1–866–NASN–SNS (1–866–627–6767)
www.nasn.org

National Association of Secondary School Principals (NASSP)
The NASSP is a membership organization of middle level and high school principals, assistant principals, and aspiring school leaders from across the United States and around the world. NASSP's motto is "promoting excellence in school leadership," and the association provides members with various programs and services to guide them in administration, supervision, curriculum planning, and staff development to achieve that goal.

1904 Association Drive
Reston, VA 20191
(703) 860–0200
www.principals.org

National Association of State Boards of Education (NASBE)
The NASBE is a nonprofit association that represents state and territorial boards of education. NASBE's principal objectives include strengthening state leadership in educational policymaking, promoting excellence in the education of all students, advocating equality of access to educational opportunity, and assuring continued citizen support for public education.

277 South Washington Street, Suite 100
Alexandria, VA 22314
Phone (703) 684–4000
www.nasbe.org

National Center on Physical Activity and Disability (NCPAD)
The NCPAD provides information about current research, local programs, adapted equipment, recreation and leisure facilities, and many other aspects of physical activity for persons with disabilities, including children and adolescents with diabetes.

1640 West Roosevelt Road
Chicago, IL 60608
Toll-free: 1–800–900–8086
www.ncpad.org

National Education Association (NEA) Health Information Network
The NEA Health Information Network is the nonprofit health affiliate of the National Education Association, the nation's largest labor organization representing 2.3 million public school employees. The mission of the NEA Health Information Network is to ensure that all public school employees, students, and their communities have the health information and skills to achieve excellence in education.

1201 16th Street, NW
Suite 521
Washington, DC 20036–3290
Phone: (202) 833–4000
www.neahin.org

National Eye Institute
Nation Eye Health Education Program
Diabetic Eye Disease Public Education Program

2020 Vision Place
Bethesda, MD 20882-3655
1-800-869-2020 (to order materials)
www.nei.nih.gov/nehep/ded.htm

National Information Center for Children and Youth with Disabilities

This national information and referral clearinghouse on special education and disability-related issues provide information about local, state or national disability groups and gives technical assistance to parents and professionals.

P.O. Box 1492
Washington, DC 20013–1492
Toll-free: 1–800–695–0285
www.nichcy.org

National Institute of Child Health and Human Development (NICHD), National Institutes of Health

The NICHD conducts and supports laboratory, clinical, and epidemiologic research on the reproductive, neurobiological, developmental, and behavioral processes that determine and maintain the health of children, adults, families, and populations.

31 Center Drive, MSC 2425
Bethesda, MD 20892–2425
Phone: (301) 496–5133
www.nichd.nih.gov

National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

The NIDDK conducts and supports research on many of the most serious diseases affecting public health. The Institute supports much of the clinical research on the diseases of internal medicine and related subspecialty fields, as well as many basic science disciplines.

www.niddk.nih.gov

National Diabetes Education Program (NDEP)

The NDEP is a federally sponsored program of the National Institutes of Health and the Centers for Disease Control and Prevention, involving over 200 public and private partners to improve diabetes treatment and outcomes for people with diabetes, promotes early diagnosis and prevention.

1 Diabetes Way
Bethesda, MD 20892-3600
Toll-free: 1-800-438-5383
www.ndep.nih.gov

National Diabetes Information Clearinghouse (NDIC)

The NDIC is a service of the National Institute of Diabetes and Digestive and Kidney Diseases that provides information about diabetes to people with diabetes, their families, health care professionals, and the public.

1 Information Way
Bethesda, MD 20892–3560
Toll-free: 1–800–860–8747
www.diabetes.niddk.nih.gov/

National Kidney Foundation

The National Kidney Foundation, Inc, is a major voluntary health organization, seeks to prevent kidney and urinary tract diseases, improve the health and well-being of individuals and families affected y these diseases, and increase the availability of all organs for transplantation.

National Kidney Foundation
30 East 33rd Street
New York, NY 10016

1-800-622-9010
http//www.kidney.org

Pediatric Education for Diabetes in School (P.E.D.S.)
The P.E.D.S. website is designed for both health care professionals and consumers, providing comprehensive information and resources for the management of diabetes in school. It contains many tools for schools including Individual Healthcare Plans, numerous procedures, and school staff action tools. There are also two online training programs entitled "Recommendations for Diabetes Care in Schools" and "Diabetes Basics".

www.pedsonline.org

Pediatric Endocrinology Nursing Society (PENS)
The PENS is a nonprofit professional nursing organization with the goal of advancing pediatric endocrine nursing. Its website features articles about diabetes-related topics, including insulin pump therapy, obesity in children, and development of a pediatric diabetes education program for home health nurses.

P. O. Box 2933
Gaithersburg, MD 20886-2933
Phone: Not available. All contact is through mail or email.
Email: Through website under contact PENS.
www.pens.org

The President's Council on Physical Fitness and Sports (PCPFS)
The PCPFS serves as a catalyst to promote, encourage and motivate Americans to become physically active and participate in sports. The PCPFS advises the President and the Secretary of Health and Human Services on how to encourage more Americans to be physically fit and active.

www.fitness.gov

U.S. Department of Agriculture (USDA)
The USDA supports several programs of importance to students with diabetes: the Center for Nutrition Policy and Promotion, the Food and Nutrition Information Center, and the Food and Nutrition Service.

Center for Nutrition Policy and Promotion.
www.usda.gov/cnpp
Food and Nutrition Information Center
www.nal.usda.gov/fnic
Food and Nutrition Service
www.fns.usda.gov/fns

U. S. Department of Education
The mission of the Department of Education is to ensure equal access to education and to promote educational excellence throughout the nation.
400 Maryland Avenue, SW
Washington, DC 20202

Office of Civil Rights (OCR)
Toll-free: 1-800-421-3481, TTY: 1-877-521-2172
www.ed.gov/ocr
Office of Special Education Programs (OSEP)
Phone: (202)205-5507, TTY: (202)205-5637
www.ed.gov/offices/OSERS/OSEP

Yale Program for Children with Diabetes
This program, directed by Dr. William Tamborlane, holds three half-day sessions per week. The sessions are led by a 10 person Diabetes Team.
(203)764-6745

Other resources for teachers, child care providers, parents, and health professionals who care for children with diabetes:

Barrett, Jena Clayton (2001) Teaching Teachers About School Health Emergencies. *The Journal of School Nursing, 17(6), 316-322.*

Bierschbach, Judy Laver Bierschbach, Cooper, Leslie, and Liedl, Jennifer A.(2004) Insulin Pumps: What every school nurse should know. *The Journal of School Nursing* 20(2),117-123.

Blum, Monica (2002) Are School Nurses Using the Recommendations of the Diabetes Control and Complications Trial in the Care of Students with Diabetes? *The Journal of School Nursing,* 18(3), 138-141.

Clarke W. (1999) Advocating for the child with diabetes. *Diabetes Spectrum* 12,230–236.

Complete Guide to Diabetes, Alexandria, VA, American Diabetes Association, 1999; 1-800-232-6733.

Education Discrimination Resources List, Alexandria VA, American Diabetes Association, 2000.*

Fredrickson L, Griff M: *Pumper in the School, Insulin Pump Guide for School Nurses, School Personnel and Parents. MiniMed Professional Education, Your Clinical Coach. First Edition, May2000*. MiniMed, Inc., 1-800-440-7867.

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- Individualized Health Care Plans (2003)
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*These documents are available in the American Diabetes Association's Education Discrimination Packet by calling 1-800-DIABETES

APPENDIX A:

Sample Health Care Plans

Individualized Emergency School Health Plan for Diabetes Management

Student Name_____ Grade_____ Date_____

MY PHOTO

I have INSULIN DEPENDENT DIABETES which means I must take insulin every day along with balancing diet and exercise. Several times a day, I check my blood sugar levels by using a special meter that I keep with me. It is important for you to understand some important things about diabetes while I am in your care.

LOW BLOOD SUGAR REACTIONS:

Occasionally, my blood sugar may be too low (insulin reaction). This can be very dangerous. A low blood sugar reaction can be a result of receiving too much insulin, skipping a meal or snack or an unusual amount of exercise. If you think my blood sugar is low, I may check my blood sugar in the classroom. If I go elsewhere to check my blood sugar, someone must accompany me. Some symptoms of low blood sugar may be:

- ✧ Shakiness
- ✧ Sweatiness
- ✧ Change in personality
- ✧ Feeling "low" or "hungry" or "tired"
- ✧ Confusion
- ✧ Looking pale or flushed in the face

If my blood sugar is low, I NEED FAST-ACTING SUGAR QUICKLY.

You can give me_____. I should start to feel better in 10-15 minutes. If my blood sugar remains low, call my parents and do the following:

_____

_____

If my blood sugar drops too low, I may become unconscious or have a seizure. If this happens:

1. Call 911
2. A Registered Nurse needs to give GLUCAGON by injection
3. Call my parents.

Glucagon is not life threatening even if it is given when not needed.

EMERGENCY NUMBERS:

_____	_____	_____	_____
Mother's Name	Home phone	Work phone	Cell phone
_____	_____	_____	_____
Father's Name	Home phone	Work phone	Cell phone
_____	_____	_____	_____
Other (relationship)	Home phone	Work phone	Cell phone
_____	_____	_____	
Health Care Provider	Home phone	Work phone	

_____

Preferred hospital

Date prepared_____

Individualized Health Care Plan for Diabetes Management

Student _____ DOB _____ Date _____

School _____ Grade _____ Teacher _____

BLOOD SUGAR TESTING (Check ALL that apply)

_____ Will not test at school.
_____ Will be done by student every day at _____
_____ Will be done by student when symptoms are present _____
_____ Will need assistance from an adult. Physician's Authorization must be signed.
_____ Will **not** need assistance from an adult.
_____ Testing supplies will be kept at school in _____

INSULIN NEEDS (Check ALL that apply)

_____ Will not need insulin at school.
_____ Will need insulin at school. Physician's Authorization must be signed.
_____ Will be using an insulin pump and is self-sufficient in its use.
_____ Will be using an insulin pump and will need assistance. Physician's Authorization must be signed.

FOOD PLAN (Check ALL that apply)

_____ Will bring daily morning snack of _____ carbohydrates to be eaten at _____a.m.
_____ Will bring daily afternoon snack of _____ carbohydrates to be eaten at _____ p.m.
_____ Will eat _____ carbohydrate servings or _____ grams of carbohydrates at lunch.
_____ On special occasions, student can eat same snack provided to classmates.
_____ On special occasions, student will select alternate snack from supply provided by parent.

MEALS AND INSULIN NEEDS

Breakfast Insulin/Carbs	Snack Insulin/Carbs	Lunch Insulin/Carbs	Snack Insulin/Carbs	Snack Insulin/Carbs	Supper Insulin/Carbs	Snack Insulin/Carbs
TIME:_____	_____	_____	_____	_____	_____	_____

Insulin Type:

_____

Blood Glucose Target Range:

_____

Sliding Scale (S/S)			
Blood Sugar	----------	Insulin Dose	
_____	mg/dl --	_____	units
_____	mg/dl --	_____	units
_____	mg/dl --	_____	units
_____	mg/dl --	_____	units
	mg/dl --		units

Comments: _____

Date Completed: _____

LOW BLOOD SUGAR SYMPTOMS

✧ Blurred vision	✧ Fatigue	✧ Irritability	✧ Trembling
✧ Dizziness	✧ Headache	✧ Personality change	✧ Weakness
✧ Fast heartbeat	✧ Hunger	✧ Sweating	

Comments_____

LOW BLOOD SUGAR TREATMENT (TEACHERS: Students with symptoms MUST be escorted to Health Room).

If student is experiencing symptoms, TEST BLOOD SUGAR.

For blood sugar < _____ give 15 gms fast acting carbohydrate _____
For blood sugar < _____ give 30 gms fast acting carbohydrate _____
If lunch or snack time – allow child to eat normal amounts of carbohydrate.
If not lunch or snack time – repeat blood sugar in 15 – 20 minutes. Repeat treatment as needed.
(Parent will provide appropriate drinks and/or food)

Retest blood sugar in _____ minutes. If under _____, repeat above treatment. If student is feeling better, s/he can: _____ .

LOW BLOOD SUGAR TREATMENT FOR INSULIN PUMP THERAPY: (In addition to the interventions listed above, if student who is using an insulin pump becomes unconscious due to a severe low blood sugar, disconnect tubing from insulin pump, call 911 and the child's parent.)

For severe hypoglycemia with loss of consciousness or seizure, call 911, administer Glucagon 1 mg. by injection, and call parents.
Comments: _____

HIGH BLOOD SUGAR SYMPTOMS

• Blurred vision	• Frequent urination	• Nausea/vomiting
• Drowsiness	• Heavy, labored breathing	• Stomachache
• Extreme thirst	• Hunger	

Comments _____

Test blood sugar, if over _____. Student should drink large amounts of water.
Test urine ketones if blood sugar is over _____, or if child is experiencing symptoms of high blood sugar.

HIGH BLOOD SUGAR TREATMENT FOR INSULIN PUMP THERAPY: (In addition to the interventions listed above, if student is using an insulin pump and blood sugar is over 240 for two readings in a row, call parent.)
Blood Glucose Target Range: _____

On Insulin Pump Therapy – High blood sugar before meals and 2 hours after:

- ✧ Assess for pump/tubing/site problems if using an insulin pump.
- ✧ Blood sugar is greater than _____ give extra insulin by using the Sliding Scale (S/S) or Insulin Sensitivity Factor (ISF) as written below Repeat blood sugar within _____ HOURS(s) if previous blood sugar greater than _____.
- ✧ If repeat blood sugar greater than _____ give insulin by syringe using the S/S or ISF.
- ✧ Contact parents and/or health care provider if blood sugar greater than _____ and vomiting, difficulty breathing or lethargy (or other symptoms of ketoacidosis).
- ✧ Repeat blood sugar every _____ HOUR(s). Give insulin using the S/S or ISF until the blood sugar is less than _____.

Insulin Sensitivity Factor (ISF) (correction factor) 1 unit of insulin will bring the blood sugar level down by _____ mg/dl.	**Sliding Scale** (S/S)	
	Blood Sugar	Insulin Dose
	_____ mg/dl	_____ units
	_____ mg/dl	_____ units
	_____ mg/dl	_____ units
	_____ mg/dl	_____ units
	_____ mg/dl	_____ units

Comments: _____

Individualized Health Care Plan for Diabetes Management

AUTHORIZATION/SIGNATURES FORM

Student _____ DOB _____ School/Grade _____ Date _____

Individualized Health Care Plan for: _____

School/Grade_____

I have reviewed and approved the Individualized Health Care Plan for Diabetes Management. I understand that specialized health care services will be performed by designated school personnel under the training and supervision provided by the School District Nurse. This consent shall remain in effect through the end of the current school year unless discontinued or changed in writing.

_____ _____
Physician's Signature Date

_____ _____
Parent Date

_____ _____
School Nurse Date

_____ _____
Building Administrator Date

Staff Members Signature (responsible for implementing the care plan):

_____

_____

_____

Reprinted with Permission from Wisconsin Department of Education Document

Individualized Health Care Plan

NAME: _____ DOB: _____ SEX: ____ ALLERGIES: _____ PHYSICIAN_____

RELEVANT DIAGNOSIS (ES): _____

DIET: _____ MOBILITY: _____ EQUIPMENT: _____

MEDICAL HISTORY: _____

MEDICATION/TREATMENT: _____

SIGNATURE: _____ SIGNATURE: _____ SIGNATURE: _____
(parent) (student) (School Nurse)

HEALTH CARE GOAL

DATE	HEALTH PROBLEM/ NURSING DIAGNOSIS	STUDENT OBJECTIVES	INTERVENTION AND RESPONSIBLE PERSON	EVALUATION AND TIMELINE

NAME: _____

DATE	HEALTH PROBLEM/ NURSING DIAGNOSIS	STUDENT OBJECTIVES	INTERVENTION AND RESPONSIBLE PERSON	EVALUATION AND TIMELINE

Adapted from Hartford Public Schools for use in Connecticut Department of Education Guidelines for Students with Special Health Care Needs.

Student with Diabetes Information Sheet

Date:_____

Student
Name_____Grade_____D.O.B._____

Parent Daytime phone number: Mother_____

Father_____

Primary health care provider: _____ Phone: _____

Diabetes Specialist_____ Phone: _____

INSULIN: A.M._____ Lunch _____
Time-Type-Amount Time-Type-Amount

Dinner_____ Bedtime_____
Time-Type-Amount Time-Type-Amount

Will require insulin at school? _____ (Obtain health care prescriber orders)
Does student need assistance with insulin administration? _____

DIET:

A.M. Snack _____

Lunch _____

P.M. Snack _____

Modifications for parties?_____

MONITORING:

Will require routine glucose monitoring at school? _____ Yes _____ No

(Obtain health care prescriber orders)

Will require assistance with monitoring? _____ Yes _____ No

Should routinely check blood glucose at_____ (time) each day and record results.

Type of glucometer: _____

Does student check urine for glucose? _____ Yes _____ No

(Obtain health care prescriber orders)

Will student needs assisting with urine testing? _____ Yes _____ No

Routine time for urine testing is_____

PHYSICAL EDUCATION:

Scheduled at_____

Snack required before physical education? _____Yes _____No

Snack given before physical education if:_____

Management of:

HYPOGLYCEMIA-Insulin Reaction

Student's symptoms are_____

Treatment_____

_____

_____

_____

HYPERGLYCEMIA(DKA)-High Blood Glucose

Student's symptoms are_____

Treatment_____

_____

_____

_____

Sliding Scale Insulin Kept at School: Yes____ No____ *yes (current Authorization for Medication Administration on file with sliding scale authorized by parent and health care provider).

**Ridgefield Public Schools*

Date: _____

Emergency Care Plan for the Student with Diabetes

Name_____ Birth Date_____

Parent/Guardian _____

Emergency phone (home) _____

Emergency phone (work) _____

Primary health care provider _____

Address _____

Student ID

Phone _____

Photo

Hospital _____

Diabetes Specialists _____

Address/Phone_____

Specifics of Management

1. Insulin Dosage: _____

   Times: _____
2. Glucose monitoring: _____

   Location of monitor: _____

   Type of monitor: _____

   Times to monitor: _____
3. Diet: _____

   Snack time(s): _____
4. ID bracelet: Yes _____ No_____
5. Time and day of physical education: _____
6. School Lunch/Recess: _____

Protocol for Hypoglycemic Episode

1. General symptoms: hunger, dizziness, sweaty palms or forehead, and change in behavior.
2. Signs/symptoms particular to this student_____

   _____

3. Action to take: _____

_____

_____

*attach additional information if needed.

4. Contact Parent/guardian if:_____
5. Cake gel or other substance to be given:_____
6. Glucagon ordered: Yes___ No____

*if yes (current Authorization for Medication Administration on file)

DO NOT LET STUDENT GO TO HEALTH OFFICE ALONE.
CALL 911 IF STUDENT UNCONSCIOUS OR CONVULSING
and GIVE NOTHING BY MOUTH.

7. Individual considerations for this particular student_____

_____

8. Contact parents/guardians if student vomits or has a fever and refer to IHCP.
9. Signatures/photocopies to (where applicable):

Parent/guardian_____ Principal_____

Student_____ Teacher_____

School Nurse_____ Lunch Aide_____

Physician_____ Bus Driver_____

Diabetes Educator_____ P.E. Teacher_____

Other Education Specialists: Guidance Dept._____ Music_____

Art_____ Library_____

Other_____

Ridgefield Public Schools
Adapted from J. School Health Nursing, April 1997

Diabetic Student Contract

Student's Name: _____ DATE: _____

School Year

I understand that it is essential to my health that I take proper doses of my insulin daily.

I understand that I will test my blood sugar in the nurse's office daily at _____.

I understand that if I fail to test my blood sugar, I will have to eat lunch in _____.

I understand that I will write my blood sugar results daily in my notebook kept in the nurse's office.

I understand that it is my responsibility to bring in snacks/juice to be kept I the nurse's office.

I understand the need to report to the nurse's office any time I feel low to test and record my blood sugar.

Student's Signature: _____

Parent's Signature: _____

School Nurse's Signature: _____

Copies to: Student
Parent
School Nurse
Guidance Counselor
House Office

Staff Training Record

Diabetes Training Record			
Staff Member Name	Diabetes Basics	Blood Glucose Monitoring	Notes

APPENDIX B:

Low/High Blood Sugar Signs and Symptoms:

http://www.lifeclinic.com/WhatsNew/FeaturedArticles/articleView.asp?MessageID=1138

APPENDIX C:

Insulin

Guidelines for Administration of Insulin

Administration

The school nurse might be responsible for injecting insulin or in assisting a student to draw up and self inject insulin. The procedure for administration of insulin is in the box at the right.

Inspect the insulin. Check the expiration date printed on the label. Humalog and Regular insulins are clear, others are cloudy. Long and intermediate acting insulins must be gently mixed by rolling the vial between palms. There should be no clumping of particulate in the insulin. Do not use insulin that is not uniform inconsistency.

Select injection site. Injections may be given in the abdomen, thighs, buttocks or arms. Insulin sites should be rotated in order to avoid tissue damage, which results in the poor absorption of the insulin. Speed of absorption decreases with each of the following sites: arms, legs and buttocks.

Steps for Insulin Injection

1. Get supplies.
2. Wash hands
3. Roll bottle to mix. Wipe top with alcohol swab.
4. Pull plunger down to _____units.
5. Push needle into bottle. Push plunger up.
6. Pull plunger down to _____units.
7. Pick injection site. Wipe with alcohol swab.
8. Pinch up skin. Push needle into skin and push plunger in.
9. Dispose of syringe per care plan.

Adopted from the New York Department of Health

Care and Storage

Effectiveness of insulin is dependent on its care and storage. Date the insulin when it is opened and discard 30 days after opening. Check the expiration date on stored insulin regularly.

- ✧ Keep refrigerated for longer shelf life. If refrigerator is not available a cool pack may be used. Unrefrigerated insulin should be kept as cool as possible.
- ✧ Do not let insulin freeze, if it does, discard it immediately.
- ✧ Keep insulin away from heat and light.
- ✧ Clumping or frosting results from too much shaking or rough handling. Discard.
- ✧ Insulin may be carried in a fanny pack, or backpack with an ice pack, as long as it is positioned so it does not freeze or get too warm.

Insulin

Insulin

There are many different types of insulin for different situations and lifestyles.

Characteristics

The three characteristics of insulin are:

Onset: The length of time before insulin reaches the bloodstream and begins lowering blood sugar
Peak time: The time during which insulin is at its maximum strength in terms of lowering blood sugar levels
Duration: How long the insulin continues to lower blood sugar

Storage

- ✧ Opened vials may be left at room temperature or refrigerated for 30 days after opening.
- ✧ Avoid exposure to extreme temperatures. Any insulin found frozen cannot be used, and must be discarded.
- ✧ Unopened vials can be stored in the refrigerator until the expiration date.
- ✧ Check the manufacturer's patient information insert for storage recommendations for insulin pens.

Expiration date
Make sure that the insulin will be used before its expiration date.

Types of Insulin by Comparative Action Curves					
Action Time	*Insulin Type	Onset	Peak (hrs.)	Usual Effective Duration (hrs.)	Usual Maximum Duration (hrs.)
Rapid Acting	Lispro (Humalog)	<15 minutes!	.5-1.5	2-4	4-6
	Aspart (Novolog)	<15 minutes!	.5-1.5	2-4	4-6
Short Acting	Regular	0.5-1 hr.	2-3	3-6	6-10
Intermediate Acting	NPH	2-4 hrs.	4-10	10-16	14-18
Intermediate Acting	Lente	3-4 hrs.	4-12	12-18	16-20
Long Acting	Ultralente	6-10 hrs.	None	18-20	20-24
	Glargine (Lantus)	4-5 hrs	None	24	24

Pre-mixed insulin (a mixture of NPH and regular) is also available, but is generally **not recommended for children.*

Adopted from the Wisconsin Department of Education

Insulin Delivery Systems

Syringes…pumps…pens…they all do the same thing – deliver insulin. These items deliver insulin into the tissue so it can be used by the body. This category includes injection aides – products designed to make giving an injection easier.

Syringes

Today's insulin syringes are smaller and have finer needles and special coatings that work to make injecting as easy and painless as possible. When insulin injections are done properly, most people discover they are relatively painless.

Points to consider for optimal insulin delivery by syringe:

- ✧ The syringe being used should be the right size for the insulin dose.
- ✧ It should be easy to draw up and visualize the dosage (devices are available to make this task less complicated).
- ✧ Shorter, finer needles are available which allow for ease of administration.

Insulin Pens

There is a wide range of insulin pen options available. The pens can be an excellent option when children need a single kind of insulin. They can make taking insulin mach more convenient. Some children find the pen needles make injection more comfortable.

Pumps

Insulin pumps are computerized devices, about the size of a beeper or pager, which you can wear on your belt or in your pocket. They deliver a steady, measured dose of insulin through a cannula (a flexible plastic tube) with a small needle that is inserted through the skill into the fatty tissue. The needle is removed and the cannula is taped in place. Insulin pumps may b worn during most athletic activities. The cannula may be placed on one of several sites on the body, including the abdomen, buttocks, thigh, or arm.

Advantages

- ✧ Pumps most closely mimic the body's normal release of insulin.
- ✧ Pumps deliver insulin in two ways:
  - ◆ Basal: small, hourly dose that is pre-programmed
  - ◆ Bolus: given to cover food or cover high blood sugar
- ✧ Pump therapy allows for much greater flexibility in food choices and meal timing.
- ✧ Children who wear pumps can participate in all school activities.

Responsibilities of Pump Wearer

- ✧ Must be willing to test blood sugar minimum of 4 times/day.
- ✧ Must learn how to make adjustments in insulin, food and exercise in response to those test results.
- ✧ Must respond to blood sugar readings.
- ✧ Must know how to "troubleshoot" the pump if blood sugars are inexplicably too high or too low.
- ✧ Must keep back-up insulin, syringe or pen, and pump supplies available at school and home in case of cannula occlusion and.or pump failure.

Adopted from Wisconsin Department of Education

Disposing of Sharps

Disposing of Sharps Safely

Millions of individuals with serious health conditions manage their care at home. For example, people with diabetes use syringes to inject their own insulin and lancets to test their blood sugar every day. All this creates a lot of medical waste. What's the best way to handle this waste?

The best way to protect trash handlers and sewage treatment workers against disease or injury and avoid attracting drug abusers looking for syringes to reuse is to follow these guidelines for containment and disposal of sharps.

Containment

- ✧ Place the sharps in a commercially available sharps container.
- ✧ Once a syringe or lancet is used, immediately put it into a sharps container.
- ✧ Keep the sharps container away from children.
- ✧ When the container is full, follow the manufacturers guidelines on sealing and locking the container. Notify the building and ground staff or appropriate school personnel for removal.

Disposal

There are different options for getting rid of the container of sharps. Some cities and towns have more options than others. Here are the best bets for safety, health and protection of the environment. Do not put the sharps out with the recyclable plastics – Sharps are not recyclable. Ask your local doctor or clinic, school's medical advisor, public health department, solid waste or streets department or environmental services department about local options. Some of them may be registered sharps collection stations. Registered sharps collection stations may charge fees only to recover costs, such as costs for the container, transportation and treatment. Some offer the services for free.

If there are no sharps collection stations in your area, you may take sharps directly to a licensed infectious waste treatment facility or contract with a licensed infectious waste hauler to transport them for you. (People transporting more than 50 pounds per month must get be licensed). Ask your doctor where she or he sends sharps, or look in the yellow pages under "waste disposal" or "medical waste."

Another option provided by some disposal companies is a mail-in sharps disposal program. The company provides containers and packaging that meet U.S. Postal regulations.

APPENDIX D:

Nutrition

Individualizing Meal Plans

Individualizing Meals Plans for Children with Diabetes

It is recommended that children see a Registered Dietician, who is preferable a Certified Diabetes Educator, once a year for an individualized meal plan. The meal plan should include 3 meals and 2-3 snacks with a specific amount of carbohydrate. The meals and snacks should be timed appropriately with the peak of the child's insulin. Each child needs a certain amount of carbohydrate based on age, size, gender and activity level.

General Guidelines for Daily Carbohydrate Intake**

Age	Daily Carbohydrate Needs	Per Meal	Per Snack
3-10 years	Male/Female [200-275 grams]	50-70	15-20
11-13 years	Male [275-400 grams] Female [275-300 grams]	70-90	30-45
16-18 years	Male [300-475 grams] Female [250-300 grams]	75-100	30-50

***This is a generalization; children who have seen a Registered Dietician may have a meal plan individualized for them based on age, gender, activity level etc.*

Knowing the carbohydrate content of given foods allows for more flexibility in the meal plan. One serving from starch/grain, fruit, milk or sweets group contains 15 grams of carbohydrate. The following chart illustrates examples of food that contain approximately 15 grams of carbohydrate.

15 Grams of Carbohydrate Snack Choices

Choose More Often	Choose Less Often
1 cup low fat milk	1 mini bag potato chips
1 mini bag pretzels	1 small cupcake
1 (4 ounce) juice box	2 small cookies
1 (4 ounce) jar of canned fruit	½ cup ice cream
1 piece fresh fruit	1 snack pack pudding
8 animal crackers	1-2 inch square birthday cake
1-1 ½ whole graham crackers	
4 peanut butter or cheese crackers	

Food Labels

Another way of determining how a food may fit into your daily meal plan is through the nutrition information found on food labels. Food labels can help you figure out the appropriate portion size to provide the amount of carbohydrate needed at any given meal or snack. Use the food label for pretzel nuggets along with the following instructions to learn how to determine appropriate portion sizes based on carbohydrate needs.

Look at serving size: 12 pretzel nuggets
Look at Total Carbohydrate: 23 grams

The sugars listed are included in the Total Carbohydrate amount and therefore should not be added to the total carbohydrate amount.

To figure out how much carbohydrate in each pretzel nugget:

Total carbohydrate divided by serving size:
23g carbohydrate divided by 12 nuggets
1.9 g/per nugget.
Therefore there is 1.9 grams of carbohydrate in each pretzel nugget

Next you can figure out how many pretzel nuggets are equal to 15 grams or 30 grams carbohydrate

For 15 Grams carbohydrate:
15 Grams divided by 1.9 = approximately 8 pretzel nuggets containing 15 grams carbohydrate

For 30 Grams carbohydrate:
30 grams divided by 1.9 = approximately 16 pretzel nuggets containing 30 grams carbohydrate

Diet Exchanges**: 1.5 Starch
**Based on the Exchange Lists for Meal Planning.

Nutrition Facts

Serving Size: 1 oz (28g/about 12 nuggets)
Servings Per Container: 18

Amount per Serving
Calories 100 Calories from Fat 0
% Daily Value

Total Fat 0 g	0%
Saturated Fat 0g	0%
Cholesterol 0 mg	0%
Sodium 420 mg	17%
Total Carbohydrate 23 g	8%
Dietary Fiber 1 g	4%
Sugars 1 g	
Protein 3 g	

Vitamin A 0% Vitamin C 0%
Calcium 0% Iron 6%

Percent Daily Values are based on a 2000 calorie diet. Your daily values may be higher or lower depending on your calorie needs

	Calorie	2000	2500
Total Fat	Less than	65 g	80 g
Sat Fat	Less than	20 g	25 g
Cholesterol	Less than	300 mg	300 mg
Sodium	Less than	2400 mg	2400 mg
Total Carb.	Less than	300 g	374 g
Dietary Fiber		25 g	30 g

Calories per gram:
Fat 9 *Carbohydrate 4* Protein 4

Special Nutrition Issues

School Parties:

Sweets can be eaten on a special occasion such as a birthday or Halloween party. The carbohydrates should be included as part of the child's meal plan. See snack list for serving sizes equal to 15 grams of carbohydrate.

Field Trips:

Children should carry convenient snacks on the bus and field tip. Bus drivers and chaperones should be notified that the child has diabetes and may need to eat a snack on the bus or during the trip.

After Care:

Children should have a convenient snack if staying after school. Notify school personnel that the child may need to eat during the session.

School Lunch:

Children with diabetes may participate in the school lunch program. Families can review the school menu ahead of time and modify as needed. Families may also wish to contact the school food service director if needed.

Snack Choices for Physical Activity

15 Grams carbohydrate:

1 – 4 ounce juice box

1 cup Gatorade

1 sliced orange or apple

1 small box raisins

6 saltines

1 cup light yogurt

¾ cup dry cereal

30 grams carbohydrate:

1 cereal bar

1 – 8 ounce juice box

2 slices bread

1 small bagel

45-50 grams carbohydrate plus protein:

1 nutrition bar

1 package (6) cheese or peanut butter sandwich crackers plus 4 oz. juice

Protein Sources:

Peanut butter

Sliced or String Cheese

Lunch Meat

Egg

Peanuts, Walnuts or Almonds

Adopted from Wisconsin Department of Education

Emergency Food Supplies
("Snack Packs" or "Low Packs)"
for Low Blood Sugar

Good overall planning and access to carbohydrates ensures that the child with diabetes have the means of obtaining appropriate emergency responses during the school day.

The family should furnish emergency food supplies to provide the child's preferred choice of food to respond to low blood sugar. The food supplies should be in several locations and travel with the child. Appropriate locations for "low packs" might be the health office, physical education office, classroom, school office and school bus.

A typical "low pack" would include easy to eat sources of pure carbohydrate such as fruit juice packs or glucose tablets. It may also contain foods to be used as a snack after the low blood sugar level has been raised, such as prepackaged cheese or peanut butter.

Recommended Foods for "Low Packs"

Food	Grams of Carbohydrate
Immediate Treatment	
4 Glucose Tablets	16
1 Tube glucose gel or cake frosting	15
½ cup juice (orange, apple, grape or pineapple)	15
½ cup non-diet soda	15
½ cup Kool-Aid	15

Follow-up Snack

(15-30 minutes following hypogycemia)

1 cup milk	12
Cracker snack pack (cheese or peanut butter)	(as listed on food label)
Granola Bar	(as listed on food label)

APPENDIX E:

Family Resources

Travel, Vacations and Camp

Travel Guidelines

Prepare Ahead

The patients' physician should be contacted for the following items:

A letter describing patient's current medical condition and a list of medications. This may be used to verify patient's medical status.

Written prescriptions for all medications including oral agents, insulin, syringes, test strips, other medications taken

May also need prescriptions to treat other possible illnesses that the patient may develop on the trip (e.g. antibiotics, meds for diarrhea, motion sickness, etc). If immunizations are needed, they should be done at least one month in advance of the trip in the even that an adverse reaction to the vaccine is experienced. The local health department is a good resource to inquire about immunizations.

The patient should always wear a MEDIC ALERT bracelet or necklace and carry an ID card in their wallet or purse detailing the management regimen, physician name and telephone number.

The airlines can arrange a diabetes meal plan when called several days in advance.

If prone to motion sickness, take motion sickness medication or wear Sea Bands (acupressure wristbands available at the pharmacy – no prescription is necessary) prior to the time of travel.

Diabetes supplies should be taken in a carry-on bag:

Food:

At least one day's supply of food in case of delayed or canceled flights, delayed meals, or restaurants being closed (e.g packaged cheese and crackers, containers of juice or fruit).

Quick sugar source: glucose tablets, glucose gel.

While in Travel

Reduce jet lag and dehydration by drinking adequate amount of fluids.

Try to maintain some degree of activity, especially on a longer flight; walk about the cabin.

If taking insulin while in flight, less air will need to be injected into the bottle, due to increased pressure inside the cabin.

When you reach your destination

Secure syringes in a locked suitcase. Use a small, plastic opaque bottle for disposal of all lancets and syringes.

While away, watch food intake, activity level and medications.

Divide meal plan so that something is eaten at least every 4 hours

If activity is greater than normal have an extra snack between meals, preferably protein and complex carbohydrate (e.g. ½ meat sandwich or cheese and crackers).

Test blood glucose every four hours and be prepared to take supplemental insulin if required.

When going to the beach:

Use sunscreen or lotion

Cover arms, shoulders, legs, head and eyes to protect you from the sun.

Adopted from South Carolina Chapter of the American Diabetes Association

Vacations

Diabetes should not interfere with vacations, which are a normal part of life. Some extra "planning ahead" is required.

- ✧ Pack enough insulin and supplies to last the whole time you are away. They may not be available at your vacation area.
- ✧ Make a checklist ahead of time of things to take. Double check at the last minute.
- ✧ If you are traveling in hot weather, keep lucagons, insulin and blood sugar strips cool. If you travel by plane, keep all of your supplies in your carry-on luggage. It may freeze in the luggage compartment of get lost.
- ✧ Carry a form of sugar with you to treat reactions.
- ✧ Have adequate snacks available in case meals are not served on time.
- ✧ Get the name of a doctor in your vacation area so you can call him/her if necessary. Take your own doctor's phone number too. He/she knows your case best, and it may be reassuring to make a long distance phone call when help is needed.
- ✧ Visit or call your doctor two weeks before you leave so that you can work out any problems before the last minute. Remember to take his/her list of suggestions with you.
- ✧ If you expect to be more active on the vacation you may need to decrease insulin dose. Discuss this with your doctor or nurse.
- ✧ If foreign travel is planned, carry a letter from the physician explaining why insulin syringes and other supplies are being transported through customs.
- ✧ When going to a non-English speaking country, the patient should learn phrases in the language of the country to which they will travel: "I HAVE DIABETES," "I NEED SUGAR OR ORANGE JUICE," "I NEED A DOCTOR," and phrases to order meals. It is wise to take a bilingual dictionary.
- ✧ A traveling companion should be prepared to recognize and treat diabetic emergencies (e.g. Diabetes Keto-Acidosis, hypoglycemia).
- ✧ The most important advice is HAVE FUN.

Camp programs for children with diabetes can provide children with role models as well as the opportunity to meet other children their age who have the same challenges. Most of the young people who work at diabetes camps are living very healthy successful lives with diabetes. Establishing relationships with them can benefit your child's long term health and self-esteem.

Community and/or residential camps that are not diabetes camp programs should be able to accommodate your child's needs if provided with appropriate support. It is crucial that your child's needs be communicated completely and the camp staff be trained appropriately.

http://www.childrenwithdiabetes.com/Used with permission.

Check List of Items to Take Along on Vacations, Travel, Camp

- ✧ Insulin
- ✧ Syringes
- ✧ Alcohol Swabs
- ✧ Blood Sugar Monitor
- ✧ Blood Sugar Test
- ✧ Glucagon
- ✧ Glucose Tabs or Some Form of Sugar
- ✧ Snacks in Small Easy to Use Packages
- ✧ List of all medications
- ✧ Identification (Name, Address, Age)
- ✧ Medical Identification Bracelet/Necklace/Card
- ✧ Name and Phone Number of Primary Care Doctor
- ✧ Name and Phone Numbers of Parents when traveling without them

Check List for Camp Staff

_____

Child's Name Child's age

- ✧ Amount of Daily Insulin Requirement
- ✧ Monitor Blood Sugar Level prior to and during exercise / play
- ✧ Importance of Exercise
- ✧ Watch for signs of hypoglycemia (Low Blood Sugar) (*please fill in signs for your child*)

  _____

  _____

- ✧ Watch for signs of hyperglycemia (High Blood Sugar) (Please fill in signs for your child)

  _____

  _____

- ✧ Nutrition (meal) requirement
- ✧ Timing of Meals and Snacks
- ✧ Check List of Items to Bring on Field Trips (please fill in usual items you pack for your child)

  _____

  _____

Medical Identification Products

Health care and emergency personnel encourage people with diabetes to wear some form of medical identification. The reason is obvious: Such identification can save time in an emergency and may save your life.

Key factors include age, form of identification, costs, and the services provided with the tag:

Age: Everyone with diabetes should have a medical identification tag.
Form: Medical identifications take many forms: wrist or ankle bracelets, necklace pendants or neck chains with dog tags, watch charms, shoe tags, iron-on tags or wallet cards.
Service and cost: No matter what the form, medical identifications carry at least three pieces of information – your name, medical condition, and an emergency phone number for more information. However, some medical identifications carry the emergency number you choose, such as yours or your neighbor's, while others carry a number that is staffed by emergency personnel 24 hours a day with your medical records and emergency numbers at hand.

Adapted from Diabetes Forecast website

Sick Day Guidelines

Effect of Illness/Injury on Diabetes Control

- ✧ Illness places stress on the body and usually will have the effect of raising blood glucose levels.
- ✧ Flu type illness with nausea, vomiting and/or diarrhea can upset the electrolyte balance of the body, causing dehydration and possibly ketoacidosis.
- ✧ Injuries like illness, also place a stress on the body and can have the effect of raising glucose levels.

Responsibilities of the School Personnel

- ✧ If possible determine the student's blood glucose level.*
- ✧ Give comfort measures as you would with any student without diabetes.
- ✧ If the glucose level is low or the student is showing symptoms of hypoglycemia, have the student take a sip only of regular soda at 5-10 minute intervals. Small frequent sips are often tolerated even by a student with nausea or vomiting.
- ✧ If the glucose level is high, or if symptoms of hyperglycemia are present the student can be given sips of sugar-free soda. If possible and if ordered, check for the presence of urine ketones.

*If the student is unconscious, unresponsive or uncooperative, or severely injured, notify the appropriate emergency personnel immediately. Do not delay getting any emergency squad by first obtaining a glucose level. The can be obtained after the emergency squad is called.

- ✧ If respirations are deep and labored, and if the student's breath smells fruity or like alcohol, the student may have ketoacidosis. Report to the parent, guardian or physician immediately..
- ✧ In cases of injury, administer the usual first aid measures as well as determining the blood glucose level.
- ✧ Notify the parents/guardian of the student's symptoms, injury and glucose level. If unable to reach a parent, call the student's physician.

Adapted from American Diabetes Association

What to Put in Your Sick Day Cupboard

Keep the following in a box marked "For Sick Days"

A Copy of "Sick Day Rules"	Ketone Strips	Glucagon Kit
Thermometer	Can of Soup	Broth or Bouillon
Gelatin (Sugared and Sugar Free)	Cans of Soda (Sugared and Sugar Free)	Powdered Fruit Drink (Sugared and Sugar Free)
Aspirin-Free Products such as Liquid, Chewables and/or Suppositories	Cans of Concentrated Juice (One that does not need refrigeration)	Pedialyte or Other Rehydration Product for Very Young Children

APPENDIX F:

Tips for Kids with Type 2 Diabetes

- What is Diabetes at:
  http://www.ndep.nih.gov/diabetes/pubs/Youth_Tips_Diabetes.pdf
- Stay at a Healthy Weight at:
  http://ndep.nih.gov/diabetes/pubs/Youth_Tips_Weight.pdf
- Eat Healthy Foods at:
  http://ndep.nih.gov/diabetes/pubs/Youth_Tips_Eat.pdf
- Be Active at:
  http://www.ndep.nih.gov/diabetes/pubs/Youth_Tips_Active.pdf
- Diabetes in Children and Adolescents Fact Sheet at:
  http://www.ndep.nih.gov/diabetes/pubs/Youth_FactSheet.pdf

Appendix G:

Connecticut Department of Education Self Blood Glucose Monitoring Guidelines

STATE OF CONNECTICUT
DEPARTMENT OF EDUCATION

Series 2003-2004
Circular Letter: C-19

To: Superintendents of Schools

From: Dr. Betty J. Sternberg, Commissioner of Education

Date: February 6, 2004

Subject: Guidelines for Blood Glucose Self-Monitoring in School

Section 7 of Public Act 03-211, effective July 1, 2003, states:

(a) No local or regional board of education may prohibit blood glucose self-testing by children with diabetes who have a written order from a physician or an advanced practice registered nurse stating the need and the capability of such child to conduct self-testing.

(b) The Commissioner of Education, in consultation with the Commissioner of Public Health, shall develop guidelines for policies and practices with respect to blood glucose self-testing by children pursuant to subsection (a) of this section. Such guidelines shall not be construed as regulations within the scope of chapter 54 of the general statutes.

The following guidelines for blood glucose self-monitoring have been developed in response to this legislation. The legislation and these guidelines have been developed in recognition of the importance of regular monitoring of blood glucose levels as part of a student's diabetes management plan. Research has demonstrated that better blood glucose control greatly reduces the risks of long-term complications of diabetes (DCCT, 1993). By developing and implementing policies and procedures that ensure timely monitoring and prompt intervention, students with diabetes will have better short- and long-term outcomes both medically and academically.

The guidelines for blood glucose self-monitoring were developed by a committee representing a broad range of stakeholders, including school administrators, school nurses, school board members, parents, the medical community, and the Connecticut Departments of Education and Health. The guidelines offer school districts a framework for developing policies and procedures that meet the needs of individual students with diabetes and their families, as well as take into consideration the circumstances of school and community. Contained in the first three pages of the attached document, the guidelines include the following key components:

- Development of an Individualized Plan;
- Communication Needs;
- Determination of Location;
- Safety Considerations;
- Staff Education and Training; and
- Evaluation of Plans.

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In addition, appendices provide information on individualized plans and a list of additional print and web-based resources, describe recommended steps for blood glucose monitoring, and supply sample tools that can be tailored for use by individual districts or schools.

If you have any questions or need additional information on the guidelines, please contact Cheryl Carotenuti, Health Consultant, 860-807-2108, Cheryl.carotenuti@po.state.ct.us or Wendy Harwin, School-Family-Community Partnerships Project Coordinator, 860-807-2105, wendy.harwin@po.state.ct.us.

Cc: School Medical Advisors
School Nurse Supervisors

These guidelines were prepared by a statewide committee chaired by Cheryl Carotenuti, Health Promotion Consultant, and Wendy Harwin, Project Coordinator, School-Family-Community Partnerships Project. The Connecticut State Department of Education would like to acknowledge the expertise, dedication and time of the following people in the preparation of these guidelines. JoAnn Ahern, Yale-New Haven Medical Center; Phil Apruzzese, CEA; Karen Bucci, Connecticut Children's Medical Center; Louise Butcher, ADA; Joseph Castagnola, Portland Public Schools; Cathy Castaldi, Parent; Susan E. Craig, Parent & JDRF; Bill Cross, Parent & JDRF; Cindy Kozak, Department of Public Health; Pat Krin, Newington Public Schools; David Larson, CAPSS; Melissa Lopez, DPH; Sheila McKay, CABE; Linda Pica, Bethel Public Schools; Paul Rossi, Parent & JDRF; Brendan Sharkey, Connecticut State Representative; Trish Vayda, Enfield Public Schools.

Guidelines for Blood Glucose Self-Monitoring in School

Introduction

Diabetes mellitus is a chronic disease that interferes with the body's ability to produce or use insulin, impairing the ability to metabolize food. Diabetes management balances careful control of diet, exercise and medication. Frequent monitoring or checking[1] of blood glucose levels is critical to diabetes management. Timely blood sugar monitoring and prompt intervention are necessary to prevent life threatening hypoglycemic episodes. Equally important, close monitoring to maintain blood glucose levels within a specified range is essential to prevent long-term complications such as heart disease, kidney failure, blindness, and serious impairment of circulation that may require amputations.[2]

The benefits of allowing blood glucose self-monitoring are significant. Students learn better when their blood glucose levels are within the proper range. It is important for schools to address the issue of location(s) of self-monitoring. Students who self-monitor in the classroom or in other locations outside the school health office can more readily adjust their blood sugar levels. They spend less time out of class and thus lose out on fewer learning opportunities provided to children without diabetes. They also gain independence and self-confidence, and experience fewer stigmas when monitoring is treated as a regular occurrence.

> The State Board of Education encourages families, schools and medical providers to work together to develop district policies and procedures. These policies and procedures should recognize the capabilities of students to participate in the management of their diabetes, with the ultimate goal of independent management. School districts should also recognize that decisions about self-monitoring must be made on a case-by-case basis, with the participation of the family, school, and medical providers, and with respect for individual needs and preferences regarding privacy and confidentiality.

The Law

> Section 7 of Connecticut's Public Act No. 03-211 states that "[n]o local or regional board of education may prohibit blood glucose self-testing by children with diabetes who have a written order from a physician or an advanced practice registered nurse stating the need and the capability of such child to conduct self-testing."

Schools must be knowledgeable of all relevant state and federal laws, and how these laws impact school district policies in this area. The most relevant federal laws include: The Americans with Disabilities Act (ADA), Section 504 of the Rehabilitation Act of 1973, The Individuals with Disabilities Education Act of 1976 (IDEA), and The Family Education Rights and Privacy Act of 1974 (FERPA). Moreover, public schools in Connecticut are required to meet standards set by the Occupational Safety and Health Administration (OSHA), a regulatory agency within the U.S. Department of Labor3. As also required for any simple paper cut or bloody nose, these standards include the need for procedures to address possible exposure to blood-born pathogens.4

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[1] Although the terms "blood glucose testing" and "blood glucose checking" are also common, these guidelines use the term monitoring. Please note that these guidelines cover blood glucose monitoring only, not urine tests for ketones.

[2] The landmark *Diabetes Control and Complications Trials* (DCCT) demonstrate that better glucose control significantly decreases the risk for long-term complications. For example, risk of diabetic eye disease was reduced by 76%; kidney disease by 50%; and nerve disease by 60%. The results were so striking that investigators ended the study early so conventionally treated patients could also realize the benefits of intensive diabetes management.

[3] OSHA regulates employer/employee conduct, and does not apply to students in schools.

[4] Schools must adhere to *Universal Precautions* designed to reduce the risk of transmission of blood-borne pathogens, which include the use of barriers such as surgical gloves and other protective measures when dealing with blood and other body fluids or tissues.

Guidelines

All students with diabetes need an individualized plan to address their health and safety needs in school settings. This plan may be a Section 504 accommodation plan and/or an Individualized Health Care Plan (IHCP) with an Emergency Care Plan (ECP). (See Appendix A.) The State Board of Education recommends that district policies regarding self-monitoring of blood glucose levels in school settings address the following issues:

1. Determine a process for developing and implementing an individualized plan for the student.

Identify a core team to create the plan. This team should include, at a minimum, the school nurse; appropriate teacher(s); the student (if appropriate); and parent(s), guardian(s) or other family members. Other possible members include the student's health care provider, an administrator and other school staff.

Obtain current health information from the family and the student's health care provider(s), including how often the child should monitor his or her blood glucose level.

Based on the student's health status, determine the minimum frequency with which health information will be reviewed and updated.

Clarify the roles and responsibilities of each member of the core team. (See Appendix B.)

2. Define expectations for communication between relevant school staff, family and the student's health care provider that includes:
    - Documentation by the student's health care provider of health needs, which may be included in appropriate authorizations for medications and procedures to be performed at school.
    - Written permission for school health staff to communicate with the child's health care provider regarding diabetes management.
    - Clear expectations for minimum frequency of communication.

3. Determine appropriate location(s) for self-monitoring that take into account the individual student's needs, level of competence, health status, and independence. Location determination should be a team decision. Such a determination should also consider the safety of the child with diabetes, other students, and staff. Factors which may impact determination of self-monitoring location(s) include:

If self-monitoring locations are outside the health room, completion of a self-monitoring checklist and documentation of such assessment by the school nurse. (See Appendix C.)
Team discussion of the self-monitoring checklist.
Completion of a student agreement. (See Appendix D.)
The determination of the location(s) of self-monitoring should address accommodations during field trips, athletics, and unusual circumstances such as lockdowns or building closures.

4. Address safety concerns, including:
    - Specific procedures for disposal of lancets and any material exposed to blood, which meet OSHA *Universal Precaution* standards.[4]
    - Procedures for transportation of monitoring equipment; storage, security and access to monitoring supplies; identification of signs and symptoms of excessively high or low blood sugar levels and appropriate responses; access to food and drink; and replacement of equipment, and supplies.

5. Establish procedures ensuring that the appropriate people (including staff members such as teachers, physical education teacher, custodian, bus driver and substitute staff) are familiar with the 504 plan and/or IHCP and ECP, and are properly "educated" regarding diabetes and the importance of timely treatment. This education should include:

   - An understanding of diabetes; the signs and symptoms of high or low levels of blood glucose; familiarity with blood glucose equipment; appropriate location(s) for self-monitoring; possible adverse effects of high or low blood glucose levels on learning; and OSHA *Universal Precaution* standards.
   - Raising awareness of diabetes and the importance of blood glucose monitoring throughout the school, especially if monitoring is to occur in the classroom. However, individual student and family privacy needs and preferences should be considered.

6. Ensure periodic assessments of the effectiveness of the individual plan, location of self-monitoring and student agreement (see Appendix D), including review of the student's competency level and changes in the school environment. Assessments should occur:

   - At least annually with the school team, including the parents or guardians and when appropriate the student.
   - More frequently if there are changes in the student's diabetes management plan, changes in the self-monitoring abilities of the student, or whenever an adjustment to the plan is appropriate. If the IHCP is separate from the Section 504 Accommodation Plan, then the team may make modifications to the IHCP without formal review of the 504 plan.

For more information, please contact Cheryl Carotenuti, cheryl.carotenuti@po.state.ct.us, (860) 807-2108, or Wendy Harwin, wendy.harwin@po.state.ct.us, (860) 807-2105.

Appendix A: Individualized Plans

Individualized Health Care Plans

Individualized Health Care Plans (IHCPs) are usually developed for students with multiple health needs or whose health needs require daily intervention. These plans describe how the school intends to meet an individual child's daily health and safety needs in all contexts, while under the care of the school. IHCPs are developed by the school nurse, in conjunction with parents or guardians, the student, healthcare providers, and other school personnel. An IHCP includes:

- a summary of health assessments; and
- a nursing diagnosis, goals, and plans of action covering the range of possible concerns.

IHCPs should also address student needs outside of the normal school routine. Considerations for students with diabetes include:

- meal times;
- changes in schedules;
- lunch and recess times;
- school transportation;
- transitions to after school programs;
- athletic and extracurricular activities;
- accommodations for test-taking;
- field trips; and
- transitions to new schools or school buildings.

The IHCP is also used to document interventions and evaluate outcomes. IHCPs can and should be updated at least annually, and more frequently, as necessary to keep pace with changing student needs and school environment.

Emergency Care Plans

Children with special health care needs should also have a written Emergency Care Plan (ECP) that provides specific directions about what to do in a medical emergency or safety emergency such as fire drill or lockdown. The ECP is often part of the IHCP. This written plan helps the school nurse, school personnel and emergency responders react to an emergency situation in a prompt, safe and individualized manner.

ECPs should provide emergency contacts and address what to do:

- For high and low blood glucose levels;
- If an insulin pump malfunctions or becomes dislodged; and
- To ensure access to equipment and medication if not carried by student, e.g. during lockdown or fire drill.

Appendix B: Sample Core Team Roles and Responsibilities

School Nurses

- Participate in core team meetings.
- Conduct nursing assessment for Individualized Health Care Plan (IHCP).
- Conduct nursing assessment for section 504 accommodation plan, if appropriate.
- Develop section 504 accommodation plan and/or IHCP with the core team.
- Coordinate development of Emergency Care Plan (ECP).
- Ensure family provides medical supplies, materials and snacks needed at school.
- Obtain necessary physician orders.
- Conduct periodic and ongoing reviews of student needs, and update IHCP & ECP as needed.
- Plan and implement diabetes training for appropriate school staff.
- Work with family and health care providers to reinforce and strengthen student self-management skills, and promote independence.

Teachers

- Participate in core team meetings.
- Work with core team to implement the section 504 accommodation plan and/or IHCP.
- Recognize signs and symptoms of hypoglycemia and hyperglycemia.
- Be prepared to respond to signs and symptoms as identified in the IHCP.
- Provide the student with a supportive classroom environment.
- Provide classroom accommodations as outlined in the section 504 accommodation plan and/or IHCP.
- Participate in diabetes education, as specified in the student plan.
- Communicate with school team as outlined in the section 504 accommodation plan and/or IHCP.

Administrators

- Understand state and federal laws.
- Participate in the development of school policy.
- Promote a supportive learning environment for all students.
- Support and arrange for staff training.
- Work with core team to implement the individual plan as needed.
- Respect the student's confidentiality and right to privacy.
- Support and facilitate ongoing communication between family, school staff and community members.

Family Members

- Notify the school of student health needs.
- Provide written medical documentation, written authorizations, and all necessary medications, equipment, and snacks.
- Work as a full partner with the core team to develop a section 504 accommodation plan and/or IHCP.
- Educate child in self-management skills and promote independence.
- Review plans with schools at least annually and more frequently as needed.

Appendix C: Sample Self-Monitoring Checklist

Student: School:

D.O.B.: Age: Grade:

Physical/Behavioral Limitations:

Self-Monitoring Criteria: *(These criteria are designed to assist the school nurse in making recommendations. Answers to the following provide a basis for team discussion of appropriate blood glucose self-monitoring locations.)*

☑

☐ **A.** Medical Provider has provided written documentation that student is competent to self-monitor blood glucose level.

Comments (if any):

☐ **B.** Student knows what equipment to use to conduct blood glucose self-monitoring.

Comments (if any):

☐ **C.** Student is familiar with individual health care provider's instructions or recommended steps for blood glucose monitoring (see Appendix E), and demonstrates the ability to self-monitor blood glucose levels.

Comments (if any):

☐ **E.** Student understands how to dispose of contaminated equipment, e.g. at home or in the health office.

Comments (if any):

☐ **F.** Student understands what locations are appropriate for blood glucose self-monitoring.

Comments (if any):

☐ **G.** Student is able to identify appropriate action if blood glucose level is not within normal range:

Comments (if any):

☐ **H.** Student knows how to access assistance, and when it is needed.

Comments (if any):

☐ **I:** An Individual Health Care Plan and Emergency Care Plan has been developed to monitor and evaluate the student's health status.

Based on Checklist:

☐ Student has successfully demonstrated competence in independent self-monitoring.

☐ Student is not a candidate for blood glucose self-monitoring outside the health room at this time, but the following steps will be taken to help the student move toward independence:

Comments (if any):

School Nurse Signature:_____

Date:_____

Date of next assessment:_____

Appendix D: Sample Agreement Concerning Blood Glucose Self-Monitoring

Determination of location(s) for blood glucose self-monitoring is made in accordance with an Individualized Health Care Plan ("IHCP") and/or section 504 accommodation plan, and [*Name of School District's*] procedures. Once location(s) for self-monitoring are determined, the following guidelines apply:

1. Self-monitoring shall be performed in the designated location(s).

2. The student shall be responsible for disposing of lancets, strips, and any other material exposed to blood either in the health office or at home.

3. The parent or guardian and student have knowledge of and agree to comply with OSHA's *Universal Precautions*.

4. If, after monitoring the student is not within his/her target range, the student should notify the appropriate school personnel in accordance with the student's IHCP.

5. The parent or guardian shall be responsible for maintaining the equipment and supplies needed for self-monitoring in the school.

The above information has been reviewed by the IHCP Team, the parent or guardian, and the student. The above procedures have been agreed upon by:

_____	_____
Parent/Guardian's signature	Date
_____	_____
Student's signature	Date
_____	_____
School Nurse's signature	Date
_____	_____
School Administrator's signature	Date

Appendix E: Recommended Steps for Blood Glucose Monitoring

1. Gather supplies.
2. Wash hands with warm soapy water.
3. Load device with lancet.
4. Wipe finger or other target area with warm soapy water. Let dry. Use alcohol swabs only if warm water is not available.
5. Hold lancet device to the side of the fingertip or other area, and press button to puncture skin.
6. Turn finger or area of punctured skin down to get a full drop of blood. If a larger drop is necessary, squeeze the area around the puncture.
7. Put full drop of blood on strip pad.
8. Follow directions for use of monitor or read the result on the bottle of strips.
9. Record results on log sheets provided by parent or guardian.

Adapted from: cite. Provided for general information only. Students should follow the instructions of their individual health care providers.

Appendix F: Additional Resources

Resources on the law

American School Health Association, 2000. *Guidelines for Protecting Confidential Student Health Information.*

American Diabetes Association, 2000. *Your School & Your Rights: Protecting Children with Diabetes Against Discrimination in Schools & Day Care Centers.* http://www.diabetes.org/main/type1/parents_kids/away/scrights.jsp.

Champion, C. 1999. *Occupational Exposure to Blood-Borne Pathogens: Implementing OSHA Standards in a School Setting*.

Connecticut State Department of Education, 2003. *A Parent's Guide to Special Education in Connecticut.* Available at http://www.state.ct.us/sde/deps/special/ParentGuide.pdf.

Connecticut State Department of Education, 2000. *Section 504 of the Rehabilitation Act of 1975: Procedural Safeguards.* Available at http://www.state.ct.us/sde/circ/circ00-01/c-9.pdf.

Connecticut Department of Labor, Division of Occupational Safety and Health (CONN-OSHA) http://www.ctdol.state.ct.us/osha/osha.htm.

The US Department of Education website has a wealth of information about FERPA, IDEA, etc. Go to http://www.ed.gov, and type the relevant acronym into the search window.

Sample IHCPs and ECPs

American Diabetes Association, 2001. *Diabetes Care*, 24 (supplement 1). "Care of Children with Diabetes in the School and Day Care Setting" S108-112.

Rapone, K & Brabston, L., 1997. *Journal of School Nursing*, 13 (No. 2). "Nursing Practice Management: A Health Care Plan for the Student with Diabetes" 30-37.

Haas, M. ed., 1993. *The School Nurse's Source Book of Individualized Healthcare Plans.* Volume I.

Arnold, M. & Silkworth, C., eds., 1999. *The School Nurse's Source Book of Individualized Healthcare Plans.* Volume II.

Print

American Diabetes Association, 2003. *Diabetes Care*, 26 (supplement 1). "Care of Children with Diabetes in the School and Day Care Setting" S131-135.

American Diabetes Association. *Diabetes Forecast*. To subscribe to this monthly magazine: 1-800-diabetes.

American School Health Association, 2002. *Health in Action*. A recent issue of this journal focuses on "Diabetes and the School Community." It is available online at http://www.ashaweb.org/healthinaction.html.

Diabetes Interview: To subscribe to this monthly magazine: 1-800-488-8468.

US Department of Health and Human Services, 2003. *Helping the Student with Diabetes Succeed: A Guide for School Personnel.* Available online at http://ndep.nih.gov/materials/pubs/schoolguide.pdf.

Websites

American Association of Diabetes Educators: http://www.aadenet.org

American Diabetes Association: http://www.diabetes.org

Children with Diabetes: http://www.childrenwithdiabetes.com

Juvenile Diabetes Research Foundation International: http://www.jdrf.org

National Association of School Nurses, 2001. *Position Statement: Blood Sugar Monitoring in the School Setting*. http://www.nasn.org/positions/bloodsugar.htm.

National Diabetes Education Program: http://www.ndep.nih.gov

National Diabetes Information Clearinghouse, a service of the National Institute of Diabetes and Digestive and Kidney Diseases at NIH, offers a wide range of resources in English and Spanish on treatment, complications, statistics and research, including on the landmark Diabetes Control and Complications Trial at http://diabetes.niddk.nih.gov/dm/pubs/control/index.htm

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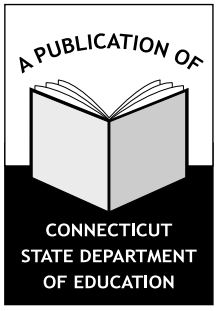
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